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THE DENTAL DIGEST

GEORGE WOOD CLAPP, D.D.S., Editor

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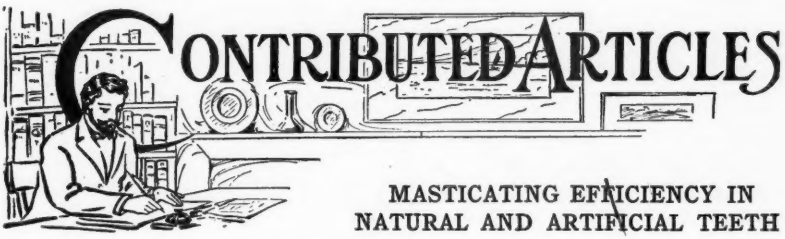


MASTICATING EFFICIENCY IN NATURAL AND ARTIFICIAL TEETH

BY ALFRED GYSI, D.D.S., ZURICH, SWITZERLAND

Professor at The Dental School of the University of Zurich

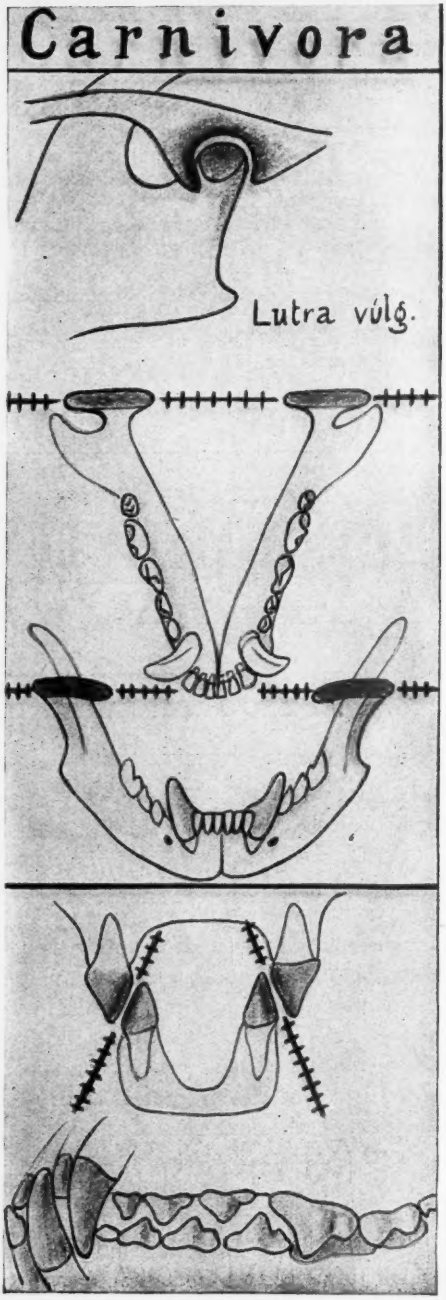
(LITERARY COLLABORATION BY GEORGE WOOD CLAPP, D.D.S.)

ARTICLE I

COMPARATIVE NATURAL MASTICATING APPLIANCES

If man is, as some scientists say, a stomach surrounded by other tissues, the proper preparation of food for digestion by that stomach becomes a matter of supreme importance to health, efficiency, and long life. To change indigestible foods to the semi-fluid condition suitable for swallowing, nature has perfected an ingenious and efficient masticating apparatus. Three parts of this apparatus are of special interest to us—the temporo-maxillary articulation, the several movements of the jaw and condyles, and the forms of the teeth. Nature has made these three to work together in a wonderful way.

It is so natural to chew food comfortably that we take it as a matter of course, like the rising of the sun. Most of us know little of the experiments nature has made in seeking to perfect the human appliance for



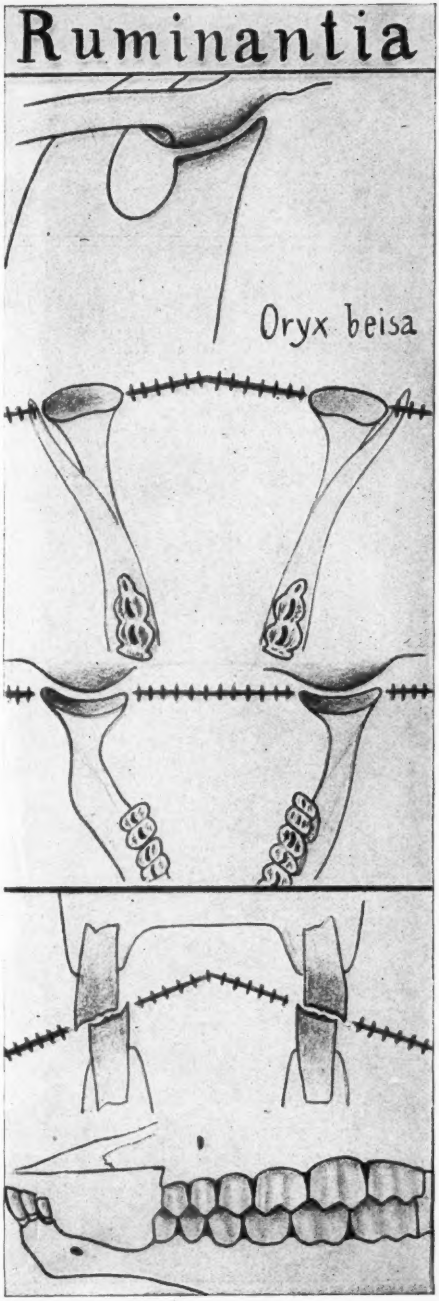
mastication, or how much more than human wisdom each detail of its construction exhibits. But it is our life task, as dentists, to restore the tooth portions of this appliance, when deranged, or to replace the teeth when lost. And if we study even briefly the steps by which nature perfected the human masticatory appliance, we shall be able to more intelligently restore decayed teeth or select teeth which are fitted to replace the lost ones in character and function.

JAW MOVEMENTS AND TOOTH FORMS IN **MEAT-EATING** ANIMALS

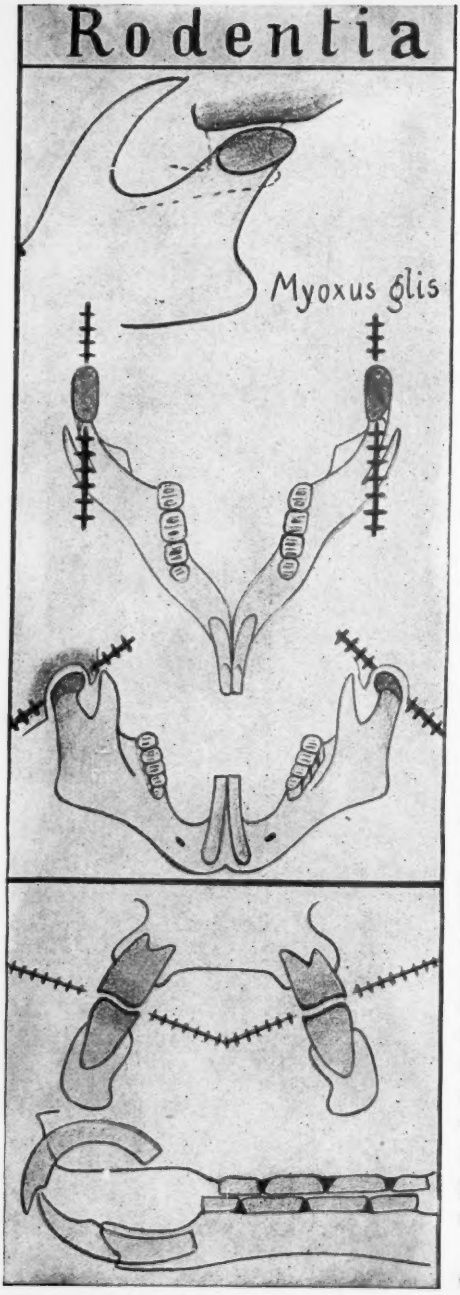
Man's masticating apparatus exhibits the characteristics of the three great classes of higher mammals—the *meat-eaters, like the lion and wolf; the cud-chewers, like the cow and goat;* and the *rodents, like the rat, rabbit, and beaver.* Nature seems to have used these great classes as experiments in preparation for man. And she incorporated into man as the final product the best elements of temporo-maxillary construction, of jaw movement, and of tooth forms.

Nature gave this class of higher mammals only one kind of jaw movement, the vertical open and shut.

It is more entertaining than profitable to discuss the old problem as to whether the hen or the egg came first. And so we shall not discuss here whether or not nature gave the jaw movements first and then shaped the temporo-maxillary articulation and tooth forms to fit the movement. The important thing, from our point of view, is that she made all three to work together in a wonderful and effective way. She made the glenoid fossæ of these animals deep, and shaped them so that any movements except the vertical were prohibited. She placed the long axes of the condyles squarely across the sagittal plane (*a*) of the skull so they should act merely as axes, just as the trunnions on the side of a cannon act to permit raising or lowering the mouth in a vertical line, but not the least turning to one side. In fact, nature so shaped the temporo-maxillary articulation in animals of this class that any lateral movement of the jaw must break it, and in the fish otter it cannot even be disarticulated without being broken. And she made the cuspids long and caused them to then lock the jaw so that even in the tearing of food,



(*a*) Definition of Sagittal Plane.



there should be no lateral movement.

Whoever designed our first dental articulator, took notice of this movement. He couldn't very well help it, for it is the plain open and shut movement which accompanies almost every act of biting or speech. This movement was long the only one exhibited in our articulators, and is still the only movement possible to the so-called "plain line articulators." These articulators would do very well for the articulation of teeth for exclusively meat-eating animals, but they are entirely inadequate for the articulation of human teeth.

Nature carefully designed the teeth of these meat-eating animals to coöperate with the jaw movement. The cuspids are long to catch and hold the food. And when closed, they hold the anterior part of the jaw firm against lateral movements even in tearing food, lest the articulating joint be broken. The teeth just behind the cuspids are the bone crushers. The occlusal surfaces of the molars are so shaped that with the vertical movement they tear the meat fibres into pieces small enough to be swallowed.

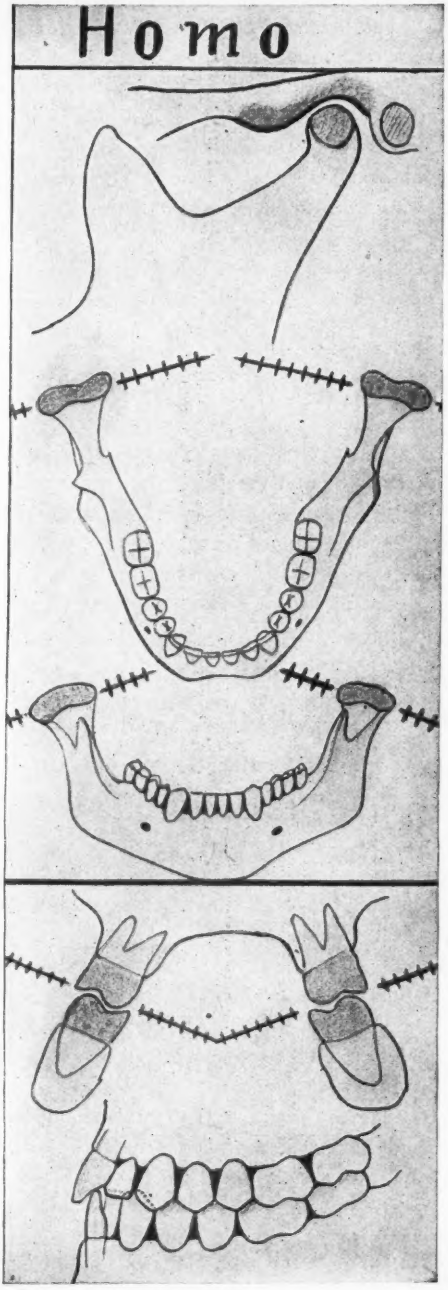
Nature took from this class, for man, the vertical

opening and closing movement and **the occlusal character of the bicuspids.** For these are the teeth in man which are **designed to crack hard and brittle foods,** and to **tear** apart the meat and vegetable **fibres.**

JAW MOVEMENTS AND TOOTH FORMS IN CUD CHEWING ANIMALS (See page 3)

The food-getting problem of the exclusively vegetable-eating animals is different from that of the meat-eaters. Instead of being compelled to tear apart meat fibres, they must isolate the vegetable cells, crush their cellulose coating, and cut the vegetable fibres cross-wise, into small pieces.

The isolating and crushing of the vegetable cells demands that the teeth act as millstones—that is, that they be rubbed together in wide lateral movements. This necessitates a form of temporo-maxillary articulation quite different from that seen in the meat-eaters. Nature has been very ingenious in securing this result. Instead of placing the glenoid fossæ on the skull, she reversed the order. On the skull she has placed shalloweminences and in the heads of the condyles shallow fossæ. This permits extended lateral movements of the jaw and condyles.



The presence of this lateral movement of the jaw in man has long been recognized, and since the days of Bonwill has been reproduced more or less accurately in anatomical articulators. But the existence of the lateral movement of the condyles has been unknown until recently. And it is incorporated in only two dental articulators—the Gysi Adaptable and The Gysi Simplex. The importance of this movement in articulation will be made plain in the chapter entitled, "The Necessity for Correct Articulators."

The teeth of the exclusively vegetable-eating animals are admirably fitted to act as millstones. They have broad occlusal surfaces crossed by hard ridges made by the infolding of the occlusal enamel.

When the occlusal surfaces are rubbed together by the wide lateral movements of the jaw, they cut the fibres into short pieces and crush the cellulose coat of the vegetable cells.

Nature took from this class of animals, for man, the lateral movements of the jaw and condyles, the broad forms of the molars, and the sulci of the occlusal surfaces. Man needs these because his food contains great quantities of cellulose-coated vegetable cells which must be isolated or crushed, and fibres which must be cut short. Porcelain teeth which are to fulfill the functions of grinders and cutters, as here described, must exhibit occlusal surfaces of proper dimensions and with proper ridge and sulci formation.

JAW MOVEMENTS AND TOOTH FORMS IN GNAWING ANIMALS

(Rat, Rabbit, Beaver. See page 4)

The characteristic jaw action of these animals is forward and backward. They gnaw by thrusting the lower jaw forward, bringing the sharp and powerful incisors together upon or in the substance, and then allowing the lower incisors to pass upward and backward along the lingual surfaces of the uppers.

The form of the temporo-maxillary articulation in these animals favors this movement. The fossæ are located on the skull, are more shallow than in the meat-eating animals, and are closed on the sides to prevent lateral movements, but open on the ends to facilitate forward and back movements. The long axes of the condyles are parallel with the sagittal plane, that is forward and back. That brings them at right angles with the condyles of the meat-eating animals.

From these gnawers, with their strong forward and back movements, nature has taken the forward and back movement of the human jaw and condyles, the biting motion. It seems strange that the first dental articulators did not exhibit this movement, in connection with the open-

ing and closing movement. But it was not until the days of Bonwill that even the anatomical articulators exhibited this movement.

As might be expected, the characteristic teeth of the gnawing animals are large, strong incisors. So large are they, that the one upper central is nearly as large as all upper molars on that side. These teeth act as scissors to cut off the food and pass it backward to the molars for mastication.

Man takes from the gnawing animals the cutting forms and function of the incisors. It is by means of these teeth that he is able to shear off portions of food and pass it along to the masticating teeth. Porcelain teeth which are to properly fulfill this cutting function must be so shaped as to effectually shear off the portions of food and pass them back to the bicuspids and molars. Owing to the fact that porcelain teeth are usually supported on more or less yielding bases, rather than to the firm bone of the jaw, they must be designed to accomplish this function rather as an engineering result than by being exact copies of natural teeth.

JAW MOVEMENTS AND TOOTH FORMS IN MAN (SEE PAGE 5)

There is an old story of a learned anatomist who defined man as "a biped without feathers." And for many years the definition stood. It has never been easy for scientists to properly place man. But a solution of the difficulty seems to be at hand. Our leading thinkers are pretty well agreed to regard him as the sole tenant of an additional kingdom in the natural world. So these kingdoms are four; mineral, vegetable, animal and human.

(Here Dr. Gysi compared the four kingdoms by stating the possibilities of each kingdom—the mineral kingdom possessing merely chemical and physical forces; the vegetable kingdom having both chemical and physical forces, with the added power to multiply, and move; the animal kingdom embodying all these qualifications, with the added power of emotion; and the human kingdom combining the possibilities of all these kingdoms, with the supreme power of thought, and the ability to think "I!")

This new view appeals to the mind with peculiar force because those who hold it believe that nature has used the other three kingdoms as fields of experiment and development, wherein to perfect the elements she desired to incorporate into man. And they believe also that nature has taken the finest results from the development in these kingdoms as the elements for the construction of man.

This theory finds ready support from the anatomist who compares the forms of the temporo-maxillary articulation, the jaw movements, and the tooth forms of the animals we have just studied, with those of man. We saw nature begin with the simplest form of straight open and shut

jaw movements in the meat-eating animals; we saw her add the lateral movement of the cud-chewers; and we saw her combine the opening and forward movement in the gnawing animals. In each case the forms of the temporo-maxillary articulation and the sizes and shapes of the teeth were so coördinated with the jaw movements as to form a harmonious and efficient whole. Now we shall see that nature has taken from each of these classes the best elements, and has combined them into a masticating appliance which is superior to that in any one of the classes. Thanks to this perfection of appliance, man is not limited to one form of diet. He bites off food as do the gnawing animals, tears apart meat fibres as do the exclusively meat-eaters, and cuts up the fibres and smashes the cellulose walls, as do the cud-chewers (See pages 2, 3, 4, and 5).

Man exhibits three important movements of the jaw, the straight up and down, the lateral and the forward and back. Each accomplishes an important function in the mastication of food.

These three movements are made possible by the location and formation of the condyles themselves. The articulating surfaces comprise the glenoid fossæ and the eminentiæ articularis. The concave part of each glenoid fossa is characteristic of the meat-eating animals. The articulating surface of each eminentia articularis is like the same surface in the cud-chewers. These two extremes are joined by a short flattened surface which is characteristic of the gnawing animals. Against this flattened surface the condyle rests. From here it can describe the opening, the lateral or the forward movement.

Nature has sloped the articulating surfaces in the human glenoid fossæ differently than in any of the three classes of mammals she used for experiments. In the meat-eaters we placed it at right angles to the sagittal plane, and placed the condyles similarly. In the cud-chewers she inclined the articulating surfaces of the fossæ on the condyles slightly forward and inward toward the median line. In the gnawing animals, the similar surfaces are inclined directly forward and back, parallel with the sagittal plane.

When nature endowed man with all three movements of the jaw, she blended these three forms into one. She inclined the articulating surfaces of the glenoid fossæ forward and inward, and gave the same inclination to the articulating surfaces of the condyles. The human condyle then faces inward and articulates with a surface that faces inward. It is only natural that in coming forward during lateral movements of the jaw, the human condyle should move strongly inward, or as we say, laterally. It is well to bear this lateral movement in mind, because when we come to the study of articulation from the standpoint of restorations of lost teeth, this movement will be seen to be very important.

It was seen that nature designed for each class of animals the forms of teeth best able to coöperate with the characteristic jaw movements. For the natural man she has perfected tooth forms which coöperate marvelously well with all three jaw movements. She has constructed the incisors for biting, the cuspids for guides and shock absorbers, the bicuspids for fibre tearers and brittle food crackers, and the molars to cut up fibres and crush the cellulose coats of vegetable cells. The story of how she has done this is of interest to every dentist. It is told in the chapter entitled, "The Masticating Functions of the Natural Teeth," which will follow.

(*This article is expected to be continued in the February number*).

Dec. 7, 1914.

Editor DENTAL DIGEST:

As for the demonstration that Dr. DeFord cited in his recent article as a sample case of Zonatherphy, allow me, the clinician, to add my side.

The patient, a dentist, offered a right inferior first molar, broken off at gum margin or neck and after examination he was instructed to hold finger for three minutes. At the end of one minute, he said his left hand had a cramp and released finger of right hand. Another spectator tried the finger grip, the pressure in the mouth was exerted on alveolar opposite the tooth and not on the inferior dental nerve as directed, as I did not expect any good results from such haphazard methods. I tested gums with lance and said there was not sufficient anæsthesia, but the patient and his friend with forceps proceeded to operate regardless of my diagnosis and suffered a failure, if you can call that a trial.

It may have been their over enthusiasm or spirit of disbelief that prompted them to operate. Be that as it may, I did not operate or attempt to, as I knew that sufficient time had not been given to the case, but someone else carried off the honors.

Yours sincerely,
(Signed) B. A. SEARS.
Hartford, Conn.

Patagonian

Kaffir

The "Busted" Theory

By F. C. Moore, D. D. S.

Perry, Oklahoma

J. Leon Williams, D. D. S.,
Then L. D. S., and muchly more,
Has mixed things to an awful mess,—
Compared to what they were before.

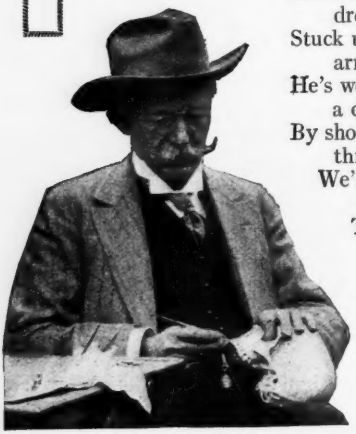
The temperamental plan is punk,
'Tis only guess and ne'er correct;
The whole darned theory's on the bunk,
By J. L. Williams fully wrecked.

He's hunted through the museums old
And dug around through smelly bones,
Perhaps he's stirred the grave yard mold,
And toppled over ancient stones.

The Patagonian, Kaffir wild,
The Chinese, Dutch, a mixed up mass;
Each one is taken, tagged and styled
And shelved away in numbered class.

Still not contented with all these
He hunts the anthropoidal fangs,
Of monkeys, and the chimpanzees,
Gorillas and orang-outangs;

The earth can boast of not one race,
Since times vast eons passed away,
But what has found its undressed face,
Stuck up in Williams' dead array.
He's won his point, without a doubt,
By showing us his death-head throng,
We'll have to throw our text books out;
The *Temperamental* theory's wrong.



Dutch

SOME THINGS PHYSICIANS SHOULD KNOW ABOUT DENTISTRY

By Alonzo Milton Nodine, D.D.S., New York
Assistant Dental Radiologist, New York Nose, Throat, and Lung Hospital

SECOND PAPER

PROTECTION AGAINST DISEASE

Health is the best protection against disease. The forces, that health largely depends upon in its defence against disease are sixteen elements properly supplied in the form of food. In addition to the supply, there is the proper preparation of these foods for digestion and assimilation and their distribution throughout the body.

We have been told that the resistance of the human organism depends upon a great many things. But the explanation of Loeb of the function of the salts of calcium, potassium, and sodium, found in foods associated with the vitamines, furnishes us with a logical, understandable and fundamental solution of the problem. He believes that these salts play the role of "tanning" the surface film of all the cells of the body. This confers on them the qualities of physical durability and comparative impenetrability without which they cannot exist. We may reason from this that when these salts are not supplied in sufficient quantities or in an improper form, the surface film of the cells do not receive their proper "tanning" and thus makes them vulnerable to the attacks of microorganisms or the penetration of soluble poisons and toxines. If preserving and milling destroys and removes these valuable salts and their compounds, and if the masticating apparatus is inefficient or unexercised, then the organism fails to receive these salts and they are not rendered fit for digestion, absorption and assimilation. The result is the breakdown of the resistance to disease. Without proper teeth and proper exercise of them by these natural foods it is impossible to maintain health and raise the efficiency of the body to its maximum.

MASTICATION AS A CURE FOR DISEASE

The physician generally neglects to consider the masticating apparatus as a means of combatting or curing disease and it is more frequently overlooked than even noticed. To a physician the loss of a molar tooth means little, notwithstanding the fact that the early loss of one of these teeth throws the whole apparatus out of gear or renders half the masticating apparatus inefficient as a chewing machine.

How many physicians know "that in order to masticate properly all teeth should be in occlusion, one to the other, so that each of the one-

hundred and thirty odd planes of the teeth are in proper approximation?" How many have ever carefully examined the occlusion of their patient's teeth in order to determine whether or not it is possible to masticate properly? How many physicians know that sound teeth can stand a stress of 150 to 300 pounds; and artificial substitutes of either plates or bridges can exert but a fraction of that force? Yet they commit their patients to these makeshifts, when, by either warning or advice the natural members could be saved or restored.

"There are patients who are dosed with prechewed, predigested foods"

Physicians are constantly dosing or prescribing for patients suffering from dyspepsia when, in many cases, all they need is to give their stomachs a rest and eat food that can be and must be thoroughly chewed. There are other patients who are dosed with all the drugs in the pharmacopœia and all the patent, prechewed, predigested foods when, if they had their teeth restored to usefulness, they would not need either drugs or artificial foods.

Again, physicians prescribe diets and treat patients who have teeth so diseased, so deformed, or so few, that they are unable to masticate. Their treatment either masks the symptoms or aggravates and keeps up the disease. These patients haunt the physicians' offices, or make pilgrimages from one consulting room to another, one "cure" or sanitarium to another, dragging out impaired lives to untimely ends.

ORAL SANITATION

If the average physician appreciates but little, the value of mastication in the prevention and cure of disease, he appreciates less still the value or the importance of a clean mouth. While he may occasionally comment on the absence of teeth, he very seldom takes any notice of the soundness or cleanliness of those present.

Teeth covered with tartar and food debris, decayed teeth holding the fermenting remains of previous meals, gums inflamed and suppurating, are not noticed, while every mouthful of food passing through such mouths is contaminated with germs and poisons to be swept into the stomach and absorbed into the system. If the patients referred to the dentist for the replacement of lost teeth are few, the patients whom the physician refers to the dentist to have their mouths restored to a healthy, sanitary and wholesome condition are still fewer.

Laxatives, cathartics and purges are prescribed to clean out a clogged and disorganized intestinal tract—a tract foul, septic, and inactive—while the frequent source and fountain-head of the trouble is a diseased oral cavity and its accumulated filth. As soon as the intestinal tract has been rendered clean by the purges and its functions restored by tonics it is reinfected from the unclean mouth and the previous disorganization is re-established.

Throats are sprayed, tonsils are painted and gargles are prescribed for irritated and septic conditions of these parts without an examination having been made of the condition of the teeth, the most fertile source of such infections.

The destructive effects of deposits of salivary calculus, gelatinous plaques of germs, and the deposits of food or sordes either in disease or apparent health are not considered or their systematic significance investigated.

DEPOSITS CAUSE LOSS OF TEETH

If physicians realized that more teeth are lost through the effects of salivary deposits than by decay they would more frequently examine the mouths of their patients and investigate the systemic or dietary cause of the trouble. These deposits of tartar are not only a source of local irritation and destruction but they cause the production of disease products which are distributed throughout the entire system. These deposits not only cause absorption of the soft and hard tissues by suppuration—the pathological micro-organisms that adhere to these deposits doing the damage—but they lower the resistance of the entire oral mucous membrane.

One of the most frequent contributors to systemic infection is the

army of micro-organisms which finds its most convenient breeding ground in the food deposits and mucus that adhere to the necks of teeth, and the interproximal spaces both above and under the gum. While these may or may not be pus producing micro-organisms, they are pathological in origin and in results. These produce quite as extensive a destruction of the peridental membrane and the final loss of teeth, as the calcarious deposits. They more often precede or are the foci for the deposition of the calcarious matter. They are perhaps the most insidious underminers of systemic resistance.

A chronic ulcer on the leg is a source of considerable concern to the physician but a chronic case of Riggs disease is usually ignored or nelected. It is not necessary to name the malignant organisms that are found in septic mouths. They are familiar to physicians and dentists. It has been stated that relatively few of the mouth micro-organisms are known producers of disease. But what is known about the other, so-called, non-pathogenic micro-organisms is so meager that there is considerable doubt about their harmlessness. However useful these micro-organisms may be for producing fermentation and disintegration outside of the mouth, they are neither desirable nor necessary for effecting these changes within the human body. Nature has provided us with suitable chemical digestives, ferments and enzymes to accomplish these results. Further, science tells us that perfectly harmless and relatively harmless micro-organisms may be and are changed into dangerous disease producing micro-organisms. This may be accomplished by the simple arrangement of decreasing the amount of oxygen in fluids and tissues in which they live or transferring them from one animal to another, or in other words, these changes are accomplished by their change in environment and struggle for existence. It is believed that micro-organisms, now classed as pathogenic evolved from or degenerated from harmless forefathers.

It is a safe proposition that all the known disease-producing micro-organisms and all the so-called harmless micro-organisms have the potentiality of becoming more dangerous or less harmless and are better outside the human mouth than in it.

(*This article is expected to be continued in the February number.*)

ARRESTING HEMORRHAGE FOLLOWING EXTRACTION.—In post-operative bleeding a tampon of cotton saturated in a five per cent. solution of iodine in chloroform is introduced into the empty alveolus, inducing prompt arrest of the hemorrhage—*Dental Manufacturers' Quarterly.*

THE RELATION OF MEDICINE TO DENTISTRY

By William J. Lederer, D.D.S., New York City
Dental Consultant to the German Hospital in New York

SECOND PAPER

NUTRITION A FACTOR IN TOOTH DEVELOPMENT

Some odd twenty years ago Dr. Sands took up this line of work with reference to the general osseous system, and Dr. Hodson collaborated with him in taking up the dental phase—and failed. Other men carried on similar experiments (feeding pregnant women on calcium salts) but harder or more resistant teeth were not produced. In some cases the children showed defective teeth and those whose mothers were not subjected to a "hypercalcified diet" developed normal, healthy teeth. How is this to be accounted for? The necessary material, calcium, was introduced into the system at a period when it was needed, and still the tissues though demanding it, did not accept it. Where did it go to? In the cases where calcium was given the feces showed an increased amount of calcium, indicating that the body passed it off and that it had not been offered to the tissues in properly assimilable form. Nature will not be commanded to "take this or take that!" She makes her demands, and then chooses. It is not only a question of alimentation, but a question of assimilation.

But how is the problem to be solved? How can it be brought about so that the nutritive medium, the blood, shall be normal, that it shall contain the precious salts and other earthly ingredients, which are necessary for calcification, in such quantities and in such form that the tissues will accept them? Not by loading the stomach with marble dust and apatite, but by offering the system the necessary ingredients in such shape as nature gives them, namely, as food; then all the calcium salts that are required for calcification will be taken up by the blood, distributed to and appropriated by the tissues. If food alone will insure proper dental development and calcification, how can it be accounted for that so many individuals develop defective teeth? A number of reasons can be brought to account for this; (1) Irrational mode of living on the part of the mother during gestation; (2) hereditary influences; (3) diseases during infancy.

It is not necessary to open text-books and to quote authorities on obstetrics, but common sense should tell every pregnant woman that her systemic condition is an altered one, and that her mode of living during gestation must be different from that before conception. She must live in such manner as to be able to satisfy the physiological demands

of the embryo and the fetus. What does the child in utero demand? Proper food, i. e. physiological blood, which is obtained by proper diet on the part of the mother; diet that is nourishing and easily digested; proper aëration of the blood, which demands plenty of oxygen and sunshine; proper exercise.

It has been demonstrated that children born in the country are not so frequently afflicted with rickets as children born in thickly-populated districts.

There are, of course, many other points that an expectant mother must consider, such as dress, hygiene, regular habits, etc., but the foodstuffs are the points at issue in this paper.

What are the foodstuffs that are conducive to proper dental development? Recognizing the fact that the teeth demand calcium salts and other earthly ingredients, foodstuffs containing these ingredients in assimilable form are the ones required.

Von Winkel, in his Maternal Clinic in Munich describes a dietary as follows: Breakfast—$\frac{1}{4}$ liter milk, one roll. Noon—$\frac{1}{4}$ liter of soup, 150 gm. of beef without bones, $\frac{1}{4}$ liter vegetables or pastry (not fat), $\frac{1}{4}$ liter beer.

All the patients at this institution, unless bedridden, are compelled to do light work about the building, which gives them moderate exercise, thus stimulating all bodily functions. Regular habits are insisted upon—personal hygiene and cleanliness need not be mentioned—and the results are gratifying. Many a woman who would not live past delivery and many a one who would give birth to a sickly child, is delivered of a normally developed, healthy offspring, and both mother and babe leave the institution hale and hearty. What do our modern mothers and ladies do? Do they modify their dress, habits, and mode of living during gestation? Do they sacrifice their rarebits and goose-liver patties! Do they give up their social appointments to be able to retire early, so as to insure plenty of sound sleep? Do they attempt to create physiological conditions within their own bodies, to pave the way for a healthy offspring? No; they do not take any notice of that child to come, may even attempt to hide its presence by lacing the expanding abdomen, throw themselves into the social tide to forget—and the unfortunate offspring often has to pay for its mother's folly.

Milk is the most important of all animal foodstuffs, containing all the elements necessary for the maintenance of life, and thus constituting a complete food. It contains all the four classes of food principles, namely proteins, fats, carbohydrates and salts. If pregnant women would drink more milk and substitute this perfect food for some of the "impossible epicurean artifices," lead a proper life, and not absolutely ignore

nature—by sacrificing some of their late wine suppers and gay all-night parties—this would not only insure their own health, but they would be able to give birth to a child in good general health and with a good denture.

The above mentioned dietary is only one of one practitioner of note and can be substituted by others; the main point is a simple mixed diet in accordance with the patient's individual wants. It shows that no excess of calcium salts is necessary for proper embryonic and fetal development, but a simple and wholesome diet and physiological mode of living will do more than dietetic feats. Proper food and a rational mode of living on part of the mother create natural conditions for the embryo and fetus. At the time of birth all the crowns of the temporary teeth are calcified and the cusps of the six-year molars are beginning to harden. The last of the teeth to erupt are the third molars; these are not thoroughly calcified until about the twenty-first year of life and often later. We therefore say, roughly speaking, that the crowns of the temporary teeth calcify in utero, and the roots of the temporary and the permanent teeth (excepting the cusps of the six-year molars) after birth.

Therefore, about twenty-two years of human life is necessary to form and calcify the denture, and consequently many are the influences which may affect the development and growth of the organs of mastication. Normal blood condition of the mother, normal metabolism, that is anabolism and catabolism physiologically balanced, will insure for the offspring a sound set of temporary teeth. The calcification of the temporary teeth does not begin until after birth and the nutrition of the child becomes a factor to reckon with in the calcification of the permanent teeth.

Pathologic conditions of the mother affect the offspring's developing denture; this can not be denied. Hutchinson demonstrated the peculiar notched appearance of the incisors; Fournier of the first permanent molars in hereditary syphilis and we frequently see similar defects as the results of exanthematous fevers. Calcification of the permanent teeth does not take place in utero (excepting the cusps of the six year molars) but the injury is one of the formative organs of these teeth, namely, the enamel organ during gestation, which diseases besides syphilis and the exanthemata affect the teeth and how these abnormalities are brought about has not been demonstrated. We are brought to face the results of these conditions, and the study of the etiologic factors producing these results offer an extensive field for investigation. These studies are onerous problems and will involve years of labor as they begin with the beginning of pregnancy of the mother, and terminate at that period of the child's life when calcification is complete.

A great deal has been written and said about infant feeding, a whole literature abounds on the nutrition of infants and children; physicians, chemists, and physiologists have devised methods, systems, and dietaries to provide the newborn with materials known as food to replace those substances which are utilized by the body in the performance of those physiological functions which constitute life, in cases in which nourishment as nature provides it, namely, mother's milk, has been denied or so altered by disease that it fails to fill its wants. Nothing as yet has been found which will absolutely and perfectly replace that source which God gave to every new being to draw its nourishment from. The nearest approaching mother's milk is cow's milk but even this does not fully replace the secretion of the maternal breast (as will be seen later on), for God intended it for calves and not for babies—and God never makes a mistake. Wherever it is impossible to obtain mother's milk, we have of course, to employ these materials which most nearly approximate mother's milk, but unfortunately, in these days many a child is denied the only perfect food (mother's milk) in consequence, not of ignorance on the part of the mother, but of a tendency to shirk those sacred duties which a mother assumes when she gives birth to a child. This tendency to substitute artificial food for mother's milk not only imposes a tax upon the infantile organism during digestion, which the body is not subjected to if mother's milk is given, but it actually creates conditions which are not normal, affecting the whole system, not barring calcifying teeth. It is true cow's milk contains all the ingredients of a perfect food, namely, carbohydrates, proteids, fats, salts and water, but not in the same proportion and degree of digestibility of mother's milk. We have contained in cow's milk the precious earthy salts so necessary for calcification, but its other ingredients make it more difficult to digest and its assimilation is not as perfect as that of mother's milk.

The question whether a child shall be strong and robust or a weakling is often decided by its food during the first three months. An infant spends most of its time sleeping and growing and at this time the muscular effort is not great. It therefore follows that the diet of an infant should contain relatively more of the tissue builders (proteids and mineral matters) and relatively less of the energy producers (carbohydrates) than one finds in the food of an adult. Proteids are furnished by the casein and other albuminoids present in women's and cow's milk, in the white of egg, gluten of wheat, fibre of muscle, etc. It is the greatest difficulty in the digestibility of proteids that causes the principal troubles in the substitution of cow's milk for women's milk.

	Woman's Milk	*Cow's Milk*
Water	89.6	87.7
Casein	1.4	3.0
Albumin	0.6	0.4
Fat	.1	3.7
Sugar	35.0	4.5
Ash	0.3	0.7

Salts contained in	*Woman's Milk*	*Cow's Milk*
Natrium chloride	1.35	0.962
Calcium chloride	0.70	0.870
Calcium phosphate	2.50	1.477
Natrium phosphate	0.40	
Magnesium phosphate	0.50	0.336
Sodium carbonate		
Fluoride of calcium	a trace	
Potassium citrate		0.405
Magnesium citrate		0.367
Calcium citrate		2.133
Iron phosphate	0.01	

According to von Bibra:	*Dentine*	*Enamel*
Calcium phosphate and fluoride	66.72	89.82
Calcium carbonate	3.36	4.32
Magnesium phosphate	1.18	1.34
Other salts	0.83—	0.88
Fat and organic matter	28.01	3.59

Dr. Koplik, in his work on diseases of infancy and childhood, in speaking of the principles underlying the process of nutrition, says of the mineral salts as follows: "The skeleton in the first year increases fully 2.2 pounds or one kilo in weight and the earthy phosphate being an important element in the composition of the bones, 3.5 gm. of phosphate of calcium are used every week during the first year by the skeleton. This demand of the skeleton for lime salts is met by the food of the infant —the milk—much better and in a more assimilable state than by any food taken by the adult subject." A fact which contraindicates the giving of starchy foods during the first year of life. "The muscles also need a certain amount of lime salts, and a dearth of mineral salts becomes evident much more quickly in the infant and child than it does in the adults. We see this exemplified in artificially fed infants, whose food (cow's milk) is not as well assimilated as is the mother's milk by the naturally fed infant. Whereas 800 c.c. of mother's milk contains $\frac{1}{2}$ gm. of potassium phosphate, 0.2 gm. of lime phosphate, 0.6 of sodium chloride, and 2.5 gm. of iron, and these are completely assimilated by the infant; the same salts in cow's milk are excreted to a great part, rachitis and disturbances of nutrition of the bones are very common in artificially fed infants."

Foerster reports the case of an infant four months old taking 1,215 c.c. of cow's milk, who excreted 75 per cent. of calcium salts in the feces. If the osseous system is thus affected it stands to reason that the dental organs do not escape.

Dr. Koplik also states that metabolism in the bottle-fed infant varies from that of the nurseling at the breast, that according to Rubner and Hebner the artificially fed infant needs a greater amount of food, as more energy is required by the body to compensate for the extra work called for by the intestines in the digestion of cow's milk. It must be borne in mind that the utilization of cow's milk by the infant is not perfect for the following differences between breast-fed and bottle-fed infants are apparent: (1) The increase of weight is irregular in the bottle-fed infant as compared to the regular increase in the breast-fed infant. (2) The daily fluctuations of temperature in the bottle-fed child are irregular as compared with the fluctuations in the breast-fed infant. (3) The bottle-fed infant as a rule is an anemic child; the breast-fed infant on the contrary. (4) The bottle-fed infant is rachitic even from birth; it is more susceptible to infection, less resistant to the inroads of disease. The bottle-fed child, notwithstanding the utilization of the calories of cow's milk is deprived of the enzymes and alexins.

Enzymes are the soluble ferments in human milk, the most important of which is amylase, capable of converting starch into sugar as ptyalin in the saliva. Amylase is destroyed by heat and human milk heated above a certain temperature loses its amylolytic properties. Amylase is not found in either cow's or sheep's milk, though it is present in a less degree in dog's and ass's milk. Other ferments have been isolated from human milk which are capable of splitting monobutyrin into butyric acid and glycerin, also a ferment splitting salol into phenol and salicylic acid, and another substance capable of coagulating fibrin. These substances, excepting lipase in small quantities, are not present in cow's milk. Alexins are substances bactericidal and globulicidal in character, and Moro has shown that the serum of the blood of the breast-fed infant is more bactericidal than the serum of the blood of the infant fed on cow's milk.

In Japan, where women have a remarkable abundance of milk and give their children no other food during the first year, rachitis is never seen. This plainly shows that the character of the food which an infant ingests affects its growth and development, just as the health and nutrition of a mother exert their influences upon the embryo and fetus. Most infantile diseases occur during the first year of life and are more frequently caused by faulty metabolism due to the rational feeding than by any other factor. Many children survive, but there is laid in the system the foundation for life-long disturbances and unphysiological develop-

ment which of course is also bound to affect the developing and calcifying dental organs, and it is here where the cause for so-called "soft teeth" is to be looked for. A remedy for such a condition does not exist, as tooth substance once calcified cannot be made to become more compact, as dental structure after calcification is not vascular. A bone that is fractured will have its break unite by the formation of callus and the secondary deposit of lime salts, obtained from the blood streams. A tooth fracture will not unite, as the structure is void of vascularity; were it otherwise, the filling of teeth would be unnecessary as nature would regenerate the tissues destroyed by dental caries.

The prevention, therefore, must be the treatment. Patients should be instructed accordingly and the dental specialist can do missionary work of inestimable value. The great mistakes so frequently made in infant feeding are the substitution of cow's milk for maternal feeding where mother's milk is obtainable, and also the too early ingestion of carbohydrates and other foodstuff that have no place in an infant's dietary. Opinions differ as to the period when young children should be given other food than milk; however, the consensus of opinion points to the fact that no solid food of any kind should be given prior to the eruption of the temporary teeth. Milk (maternal till about the eighth month, unless weaning becomes necessary through disease on part of the mother at an earlier period; good cow's milk after that) should be the principal food for eighteen months. Starchy food should be withheld for about a year. Nutrition is the basis of all development, and if this important function is supervised according to a common-sense physiological regimen the result will be a normally developed organism. It means a healthy body, a sound mind, and good teeth. Therefore nutrition is a very important factor in tooth development. Were it not so we would not obtain the abnormalities of tooth development and eruption following diseases of nutrition, as scurvy, rickets, marasmus, etc.

150 East 74th St.

(*The article is expected to be continued in the March number.*)

A Quick Method of Adjusting an Inlay.—A quick and accurate way of adjusting a gold inlay, especially a large compound, is to heat same to a dull red, then cool without dropping in acid. Insert in cavity with slight rocking movement. Any prominent point will make a bright mark on the oxidized gold, showing points to be relieved—D. A. Hare, D.D.S., Chicago, *Oral Health.*

PARENT'S LIABILITY FOR DENTAL SERVICES

By A. L. H. Street, St. Paul, Minn.

There is an important limitation upon the legal liability of a parent to pay for services rendered his minor child by a dentist, which should be understood by every practitioner. This limitation, according to the decisions reviewed below, is this: The parent cannot be held responsible for such services, if he did not authorize their performance, unless the work was immediately necessary and he unreasonably refused to authorize the expense. And, as decided in the Illinois case referred to below, a father is not chargeable for services performed by one dentist, if he directed his child to go to another.

The rule of liability has been thus announced by the Massachusetts Supreme Judicial Court: A dentist established a claim against a parent for work done for a minor child by showing either that the work was authorized by the parent, or that it was necessary for the health and comfort of the child, and the parent negligently failed to provide a dentist for him, or means to procure the services of a dentist (Lamson *vs.* Varnum, 50 *Northeastern Reporter*, 615). The court said in this case: "The defendant's son, a boy of 19 or 20 years of age, suffering with toothache, living in his father's family, would naturally be supposed to be authorized by his father in applying to a dentist for surgical treatment." On an issue as to whether the father expressly authorized the son to have the work done, the court found that there was sufficient evidence to support a conclusion that he was so authorized. The evidence showed these facts: After the services were rendered, the boy told plaintiff to charge the work to his father. This, the court finds, constituted a representation that the boy was authorized by his father to procure the services on his father's credit. It further appeared that plaintiff sent statements covering the transaction to defendant, and that the latter did not repudiate his liability, until suit was brought.

A NEW YORK DECISION

Here is the reasoning of the New York Supreme Court on the question: A parent is under a natural obligation to furnish necessaries for his minor children; and, if he neglects this duty, any other person who supplies such necessaries is deemed to have conferred a benefit upon the delinquent parent, for which the law raises an implied promise to pay on the part of the parent. But, of course, much is left to the discretion of a parent as to what constitutes necessaries. Necessary services with which another may supply a child, upon the faith of implied or apparent authority to

pledge the parent's credit, must be such services as of which the child stands in immediate need (Ketcham *vs.* Marsland, 42 *New York Supplement*, 7). In this case the court held that a person with whom a child was temporarily residing could not pledge the parent's credit for a dentist's services performed in filling and regulating the child's teeth, since such services were not required by any immediate necessity, and should be contracted for by the parent. But it was found that, although there was no original authority for pledging the parent's credit in the first instance, he became bound through failure to disavow the transaction after notice of a claim founded thereon. This was a suit for the reasonable value of services rendered to defendant's minor daughter while she was temporarily residing apart from her parents in the care of a Mrs. B. at whose direct request the dental services were performed. The reasonableness of plaintiff's charge was virtually conceded, the main issue in the case being whether Mrs. B. was empowered impliedly to pledge defendant's credit in the transaction. The court said: "Mrs. B. was not a general agent of the defendant in the matters pertaining to the maintenance of the child. She was a temporary custodian only, and, while her duties imported an agency to pledge the defendant's credit for the relief of sudden and urgent necessity, that agency did not extend to the request of such services as these in suit, since, as appears, they were not absolutely called for at the particular time, and were of a nature such as the parent, not the temporary custodian, was to contract for, if found to be desirable. There was evidence—in the testimony of the child—showing the actual services performed to have been the extracting of a tooth in relief of a toothache; but, while such service would naturally have been within Mrs. B.'s agency to require, the plaintiff makes no claim for it. In finding that defendant became liable for the amount of plaintiff's charge through having failed to earlier repudiate Mrs. B.'s authority to pledge his credit, the court said: "Plaintiff sent a bill to the defendant for these services, and received no response, either in approval or dissent; and, during the ensuing three years, or more, up to the time of the commencement of this action, several communications of his to the defendant, with regard to his claim, met with no better response. Was not a ratification to be inferred from such silence? Clearly, the answer must be in the affirmative."

AN ADVERSE ILLINOIS OPINION

But an Illinois court has held that where a parent sent a child to one dentist, and the child went to another, the latter could not recover the amount of his charges, notwithstanding the fact that they were reasonable in amount (Dumser *vs.* Underwood, 68 *Illinois Appellate Court Re-*

ports, 121). Defendant's daughter, having been directed to go to Dr. W., the family dentist, and obtain an estimate of the cost of certain work which she needed to have done, obtained his estimate at $10, and defendant authorized her to have the services performed. Later the girl went to plaintiff, another dentist, who did the work, charging $19 therefor. Defendant did not know that plaintiff performed the services until he received a statement of the account. In deciding that plaintiff was not entitled to recover, the Appellate Court said: "In our opinion appellee has no ground for recovery against appellant. The services were performed without the knowledge or consent of appellant at a time when his daughter was residing at home, and when her father was ready and willing to provide all things necessary to her care and comfort. When a person furnishes necessaries to a minor without authority from the parent, he does so at his peril, and, in order to recover from the parent, he must show either an express authority, or circumstances from which such authority may be implied. The parent is to be the judge of the wants of the child and of his ability to supply them, and where no express authority has been given, it devolves upon the party suing to show the parent's neglect to provide for the child's wants."

MEDICO-DENTAL COÖPERATION

By F. W. Saddler, D.D.S., Norristown, Pa.

The coöperation of physician and dentist in Norristown, Pennsylvania, is exemplified by the following account.

The writer was called to the Charity Hospital, at Norristown, for consultation with the physicians there and found upon examination that the patient's inferior maxillary was fractured. The patient was suffering, the wound having been inflicted two days previous. A wagon had passed over the patient's head from the back to the front at the line of the inferior maxillary, and broken the arch as a horseshoe would be broken by forcing the two ends together. The integument was not broken and the break did not seem noticeable. The line of fracture came directly in the median line, between the centrals.

The physicians gave the case into the hands of the dentist knowing a splint had to be made. The making of a splint does not come into the hands of many dentists during practice. The experience they have is mostly confined to the college days, so at this time a word would be apropos.

The taking of the impression is difficult on account of the swelling and the inability of the patient to open his mouth or otherwise render assistance. The tray filled with soft beeswax is inserted into the mouth and the impression is taken of the fractured mandible with the fragments out of position and with as little pain and inconvenience as possible to the patient. No attempt is made to assimilate the parts.

The impression of the superior maxilla is then taken. After the impressions are poured, the casts are then sawed apart, readjusted and brought into proper occlusion, mounted on articulator after which tin-foil is put around teeth as smoothly as possible, rubber is placed over each set of teeth and the two brought together, vulcanized, polished and inserted. A Gibson or a Barton bandage is placed on patient's head and left there for four or five weeks. The splint is then removed, but the bandage is retained for a week. In this case the interdental splint was worn for four weeks. Perfect union took place in fifteen days.

One week later the writer was again called to examine an accident in an iron foundry. The patient was admitted to the hospital. After the impressions had been taken and poured it was discovered that the superior maxillary was broken. Where the casts were to be assembled, the arch of the upper jaw appeared to be out of position. The writer sawed the upper cast into two parts and readjusted the two casts, then made a splint. The superior maxilla was found broken from the first bicuspid back including the posterior plates. The lower maxilla was broken between the first and second bicuspid and through the mental foramen. An X-ray picture showed the fracture more plainly, also that the right side was dislocated. The principal reason for taking the X-ray was to verify the diagnosis, as two physicians and the dentist were undecided as to the neck of the condyle, which appeared to be involved. From a digital examination it was quite impossible to properly diagnose the case. When the photograph confirmed the diagnosis the splint was inserted. A week later the physician removed a small spicule of bone, which had caused some suppuration. The patient is now on a fair way to health.

On September twenty-first the two leading daily papers of the borough gave a long and glowing account of the part the dentist took in the operation, and although the technic was poor and vague the profession has been brought into prominence and the general good of the dental profession enhanced.

The writer thinks that if the dentist would do more of such work in conjunction with the medical profession he would be helped and each given a higher position.

CORRESPONDENCE

Editor DENTAL DIGEST:

In the DENTAL DIGEST for October, p. 571, under the heading "Let Us Remember" two paragraphs are quoted of which the following is the first:

"In conclusion, let us remember too, that when it seems to us that Germany is indifferent to human life in waging this fierce war against all the world, a sobering and illuminating thought is this—that even if the war is a long one and 630,000 per year of her sons are killed, she will still not have murdered as many of her people as we in the United States annually kill in our industries and otherwise. We have killed these human beings that capital might have larger profits, that our rich men might gamble at Monte Carlo and our women forget that life has duties."

While the publication from which these statements are "selected" is not given, the figures of the alleged fatalities are represented in a foot note as taken from the report of Professor Irving Fisher, Member of the National Conservation Commission. In regard to this, it is the most audacious instance of falsification that I have ever known. I have carefully read Professor Fisher's admirable Report and I feel it my duty to advise you that there is no statement of such industrial slaughter in it, and no figures from which even approximately such deductions could be made.

The statement as quoted in the DIGEST is the most mendacious libel against American employers and business methods that ingenuity could condense into so brief a space, and it is doubly damnable as purporting to rest on respectable authority. Such falsehoods could hardly emanate from simple ignorance. They must be malicious, and the evil they do when circulated in foreign countries and among the uninformed in our own land is incalculable. It is the virulent stuff on which anarchists, syndicatists and vicious agitators thrive and breed social discontent.

Professor Fisher devotes a chapter in his Report to the Prolongation of Life, and in dealing with the subject of preventable deaths, or "postponable deaths" which he says is the more exact expression, he constructs a table of ninety diseases with percentages of the possible prolongation of life if "knowledge now existing among well-informed men in the medical profession were actually applied in a reasonable way and to a reasonable extent." From arbitrary conclusions, because no statistics are possible as proof, it was deduced that about 42 per cent. of deaths under present circumstances and customs might be postponed. But this would

mean the whole mass of the population educated up to the standard of knowledge of the most advanced physicians and sanitary experts, and with a willingness and energy constantly to apply such knowledge to their own welfare.

Is not that quite a different thing from "killing 630,000 people in our industries and otherwise that our rich men may gamble at Monte Carlo and our women forget that life has duties?"

The fatalities in the industries of the United States are greater in proportion to numbers employed than in the principal countries of Europe, but it is owing very largely to the same reasons that crime, violence and vagabondage are greater—lack of discipline, carelessness of rules, indifference to laws. The figures of fatalities as given by the Census Bureau (1911) in all employments, including railways, street cars, machinery, mines, quarries, factories, automobiles, and "other violence" and "other crushing" are 34,622 for the registration area, and this includes persons working for themselves. Professor Fisher quotes from "New Encyclopedia of Social Reform," 1908, that the number of accidents among men employed in the United States in 1906 was 208,000 of which about 5,000 were fatal—exclusive of mining, railway, and shipping accidents. Deaths in 1911 from mines and quarries were 2,372 and from railways and street cars 9,579. While railway, statistics show that of the large numbers killed by railways far *more than half are trespassers.* Who is to blame?

To disseminate false and libelous statements against the business men of America such as that quoted above is little less than treasonable. Yet it is done so recklessly that even the men who suffer the unjust odium resulting from it feel it hardly worth while to enter protests. If it affected only the individual employers in our industries, it would be despicable enough, but it is far worse—it is a national injury.

W. H. Brown.

Chicago, October 27, 1914.

New York,
November 10th, 1914.

My Dear Mr. Brown:

I have taken the time to look up Irving Fisher's report, entitled "The Public Health Movement," and find that the 630,000 deaths in the United States annually are principally chargeable to seven great causes, rather than to the carelessness or selfishness of American employers.

I am going to publish your statement just as you make it, although I think that your vehemence is no more warranted on your side, than was the vehemence of the author on the other side.

I do not in the least mind publishing this, because I am very much

more anxious to have things right than to avoid any reflections upon THE DIGEST, or to seek to cover up errors in which THE DIGEST may have had a part.

If one were to divide the 630,000 deaths equally among the seven causes, he would have 90,000 deaths from accidents, and if one were tempted to be conservative, he would actually say that accidents might easily amount to 70,000. A great number of these are undoubtedly due to carelessness of the person injured. I happen to be one of those who drive an automobile a good deal through crowded streets and I am often led to wonder that the number of accidents from automobiles is not much greater than it is. It is not at all uncommon in this city for children to jump out in front of an automobile, trying to see how close they can come to the tires; some of them in crowded districts hold their hats under the tires, others jump on the running board when the car is moving slowly. Many, of course, are playing ball and other games in the street and they keep the most careful and conscientious driver constantly on the qui vive to avoid accidents.

On the other hand, a considerable proportion of these accidents may undoubtedly be due to the indifference of employers who regard the human elements in their production, as the least expensive and valuable and who take no pains to preserve them.

I am sorry that the statement was made as it appeared. I am sorry that THE DIGEST copied an inaccurate statement. I am glad that you called this to my attention and I am glad to make the acknowledgment as public as was the error.

Yours respectfully,

GEORGE WOOD CLAPP.

Mr. W. H. Brown,
Chicago, Illinois.

Editor DENTAL DIGEST:

In THE DIGEST for November, 1914, page 656, I note that G. C. S. is asking for the best after treatment for controlling pain after extraction, especially when cocaine has been used. I will give him a little of my practical experience as I have been extracting teeth with the use of cocaine for about twenty-two years and I have had some pretty hard cases to handle, some cases of unusual idiosyncrasy.

Case 1. was that of a man 45 years of age, with upper 2nd third molar in a bad condition from pyorrhea alevolaris and very painful; he was brought to the office by a physician. After trying all the remedies I had ever used for similar cases I produced no relief. The patient begged me to extract the tooth, which I did, using a good amount of local

treatment containing ½ of 1 per cent. cocaine, which is as strong of cocaine as I use. The tooth was painlessly extracted, but almost immediately a paroxysm of pain followed so severe that the patient was almost unable to bear it. The physician proposed a hypodermic of morphine, but I took a cone of cotton, saturated it with a strong solution of iodine and pressed it to the bottom of cavity; this relieved the pain almost immediately, to the surprise of the physician and the patient. I find this use of iodine always practical after extracting, especially in cases where an abscessed root is left in the jaw.

The best general remedy for relieving pain after extraction and to assist in the repair of the jaws that I have ever found, is the following.

Oil of cloves	*dram ii*
Tr. aconite	*drops iv*
Menthol crystals	*gr. xi*

Apply this to the gums with a pellet of cotton several times a day till pain is all gone and soreness relieved.

J. ANDERSON, Kane, Pa.

Editor DENTAL DIGEST:

Permit me to answer G. C. S. in November issue of THE DIGEST, page 656. To alleviate pain after extraction, by local or general anæsthetics—use equal parts (by measure) of guaiacol and glycerin on a pledget of cotton carried into seat of socket and then removed; this will stop pain immediately.

A. A. GOLDMAN, D.D.S.,
Oil City, Pa.

Editor DENTAL DIGEST:

Referring to article on page 656 of November issue by G. C. S., I wish to state that I have had a number of cases where there has been considerable pain after extraction and I have found europhen (dram 1) orthoform (dram÷*ss*), made into a paste by addition of petrolatum and placed in the socket act like magic in controlling pain. I generally use a syringe with a large needle for placing the paste where I wish to have it.

V. E. LAGER, D.D.S.,
Chicago Ill.

Editor DENTALDIGEST:

If G. C. S. will use Dr. J. P. Buckley's "Euroform Paste" on a bit of gauze, in the crypt, or Dentalone in some way, instant relief will be obtained. The paste is a specific for pain in any case of trauma.

G. A. BOWMAN, D.D.S.
St. Louis, Mo.

Editor DENTAL DIGEST:

G. C. S. will find that he will get excellent results from the following recipe. After recent extraction with cocaine or with any drug used for the local extraction of teeth where pain is centralized in the socket of the tooth, use the following liquid full strength on cone of cotton in cavity where recent extraction has taken place. The writer has used this many times with excellent results.

Spiritis vini rectificatum	*oz i*
Chloroform	*oz ii*
Sulph. Ether	*dram vi*
Gum Camphor	*oz ÷ ss*
Tr. Opii	*oz i*
Oi. Caryophili	*dram ss*

Where pain is centralized in the ganglia along the fifth nerve, I would be inclined to use antikamnia and codeine tablets, one tablet every one to two hours as required until pain is relieved.—C. S.

New York. Dec. 14, 1914.

Editor DENTAL DIGEST:

In the November number of the DIGEST, we notice an article on Christian Science by R. R. S. of Toledo, Ohio. We would like to ask—Why, if Christian Science does not depend on the influence of one mind over another, that Christian Science Healers (so-called) can do absolutely nothing for one sick, if even another person in the same room or house does not believe in Christian Science. Again R. R. S. refers "To ills to which human flesh is heir." That does not sound like Christian Science which says—There is no pain—it's all in the mind.

Better read up, old man, before making corrections.

C. O. LASHELLE,
Barnes, Kansas.

ANDREW CARNEGIE'S FOUR RULES

FIRST.—No sharp bargains—do more, not less than promised.

SECOND.—If disputes arise always give the other party the benefit of the doubt. Avoid resort to law, compromise.

THIRD.—Subject all products to more rigid tests than purchaser requires. A reputation for producing the best is a sure foundation upon which to build.

FOURTH.—Should honest, capable contractors need extension of payments from accident or unusual stringency be lenient, generous, and help them thus making them friends.—*System.*

Ten men may reach the heights of accomplishment by plodding where one arrives by the flight of genius. — *The Founder of Business.*

ETHICS OR RESPECTABILITY

The next time you hear someone say that it is not ethical to discuss the business side of dentistry, the costs of service, of collections, etc., but that all should be left to chance or the methods of the fathers, just remember what is written here.—EDITOR.

Society is struggling for freedom against a great obstacle—the past. We are in bondage to it. The dead past, with its chain of ignorance, superstitions, traditions, and customs, holds us as a slave is held, chained to the block. The useful man is he who breaks our chains and gives us liberty.

Over against this liberator is the great horde of the respectable—their backs to the future, their faces to the past, standing like a mighty phalanx —this bulwark of respectability. Here and there in the throng is seen a strange and isolated object—the forward-moving man—his face toward the future, looking into the faces of society, progressing against their mighty inertia, moving on, battered and torn, derided, scorned, stoned—with blood upon his brow but not upon his hands. The hands of society are the blood-stained. It is the lonesome one whom they assault, when not too intent upon assaulting one another.

There is not one social movement that is of significant value that is respectable—respected by mass and class. As soon as an object is attained, it ceases to be a movement; it is accepted by society; it is static; it is respectable. There are many which have begun as movements of social promise, soon to become corrupted and dissolved in the emollients of respectability. The same with individuals. Many have stood apart for a while—some great souls forever—but most have yielded to the backward pressure and grasped the things of the past in self defense or have gone down crushed and beaten.

This urge of respectability is a mighty force. The yearning to be thought well of, to move with the mass, to do as others do, to conform to custom is a gripping power. It is the evil influence in our system of education: it robs religion of its merit; it creates the monstrous evils of patriotism and race prejudice; it destroys the individual. The parent

who stands out alone against the school system which would press his child into the mold of the commonplace, and who proceeds to help the child to become an individual; the pietist who creates his own religion; the citizen who decries the crimes of his government and calls the State to account; the Teuton who hails the Slav as brother; the individual who stands alone upon the serene heights of life, beaming down with loving tenderness, and lending a helping hand to the society which hurls its scorn and contumely at him—these are the saviours whom respectability impeaches.

There are to be reckoned with a class of people who stand between respectability and unrespectability. They are those who faintly have caught the vision of light and dimly see a free and redeemed society. These are they who hold on to the cold, dead past with one hand while the other stretches toward the light gropingly. These are the Janus-faced who are at war with their own hearts. They give their voice and approval to progress, but are pleased to be counted with the cohorts of reaction. Pouring new wine into the old bottles, singing new songs to the old tunes, now and then looking squarely toward the light of the new day, they are buffers between the crowd and the liberators of mankind. They help more than they harm. Let us be thankful for them. Their number increases as science and understanding increase. They say that they would lose their influence with the mass if they let go of the past. Perhaps they are right; but one can not but think that if they would squarely face about and be counted with those who move forward, take their beating and their shame, the strength they would give to progress would be worth the price. At least their own souls would have the joy of freedom. Their chains would have fallen away.

How great is respectability that it holds in its clutches the destiny of the race and stays the entrance of man into the land of his heritage! How does it stigmatize every great soul that longs for freedom! How universal it is! The church, the school, the press, the home, the public office, and the mart of trade—over all hang the pall of respectability. Rarely do the vested interests see a great soul; and when they do, how manifest is their disapproval!

So long as there is evolution; so long as society is imperfect; so long as there are possibility and hope of improvement, just so long will respectability remain the great barrier. The human race will be saved when the number of those who are willing to suffer the scorn of society and who move onward untrammeled by the past, has become so great that the onward-moving current sweeps with it the pathetic relic of emasculated respectability. This is the heliotropic movement—this turning toward the light—which yet is scarcely in flower, but which is destined in time to come to bring a new sweetness into the world.—*Selected.*

THE PRACTICE OF GUESSING AT FEES

By H. V., CLEVELAND, O.

So much appears in our dental magazines about business methods that I feel compelled to dip in my oar and spout forth an idea or two with that little instrument, the pen, which is considered mightier than the sword.

There are some things we observe other dentists doing which, of course, we never do ourselves, Oh my, no! a thousand times no! no!—and that is the practice of guessing at fees. If every dentist would sit down and figure out what it costs him to operate, per hour or per operation and then would reflect quietly on the time he served in dental college when everything in him called for a chance to get out and earn some real money; if he would reflect on the real hard, iron men he plunked into tuition, instruments, and coffee and sinkers in the nearby bean emporium; then on the investment in office, cost of running same and interest on investment, there is no question but what there would be a more uniform and just fee schedule.

Then, above all, get paid for everything we do. I mean for the love of Pete, don't throw in a cleaning with a job, don't treat teeth for nothing. Again we hear the chorus, Oh my! Oh my! *I* never do that but some one is doing it.

If you wish to get a concrete example of business hardheadedness, go to your nearest Ford agency and talk car, this agent will not say "I guess this car will cost you so and so." Instead he will say, "This touring car is $494 F. O. B. Detroit." Why? because Mr. Ford has figured out exactly what it costs him to operate, and exactly what his profit should be.

Professional men shun the word profit (in dental meetings) but we are selling brains and service and we are compelled to sell them at a profit or go out of business.

It is harder to figure what brains cost than what Mr. Ford's car cost but it can be done. Some cost more than others and are worth more—but this is not a *discourse* on brains. The idea is—figure your value and charge accordingly.

To go back to Mr. Ford again, when you have stood off your supply man and purchased your Ford, does the agent fill your car with oil and gas? Yes, if you wish, but at the market price.

If Mr. Henry Ford thinks it poor business to give you two dollars' worth of oil and gasoline with a five hundred dollar purchase, what kind of business is it for a dentist to give away a perfectly good treatment with a ten dollar crown?

Every little bit helps and I hope these business articles continue, they are making better dentists and more ethical ones I believe.

THE FINE ART OF DENTISTRY

By Elbert Hubbard, Aurora, N. Y.

Every man is accepted by society at the estimate that he places upon himself.

It is well for a dentist to take good care of his nerves, and not tackle a difficult job when he is a little out of sorts.

And I have noticed this, that in instances where I am more or less perplexed, if I go and shave I change the current of my thinking. When you change your socks, you change your mind.

Often the simple fact of wearing a different pair of shoes in the afternoon from what you wear in the morning, putting on a different collar or tie, changing your underclothes—all these will have a direct effect on your thinking.

It is a great thing, too, if there comes a little lull in your work, just to put on your hat and walk around the block.

You will come back taking a new view of life.

No competitor can take away your business unless he really should.

If you have anything to offer the world in the way of service, no man can steal it from you.

Next, the fact that the man across the hall will do work cheaper than you is not going to destroy your business. Your customers will stand by you just the same, and some of his customers will come to you, knowing that you charge more. They will go to you in the hope and expectation that you are going to give them better service. Then make sure that you do—or, at least make sure that you make them think you do give them better work, by looking well to your manicure set, keeping your own teeth in good condition, wearing clean linen. I have known of dentists who used perfume, but I think this is a mistake. Cleanliness and proper sanitation and right thinking are the things.

Most women size a dentist up by his linen; and when you lie back in the chair about the only things you see are the hands.

I notice that most good dentists are good talkers; and, then you have your patient at a disadvantage. Where he cannot talk it is pretty good policy for you to do the talking for him.

This actually stops his mouth in a double way. If you keep talking he cannot.

The dentist can give the patient a great deal of good, scientific information.

There is a certain dentist to whom I go twice a year regularly and have my teeth looked after and cleaned up, because I like to hear what the man has to say. He has the latest in science and sociology, and always furnishes me a few new ideas. So we have a nice, jolly, little visit, and he usually soaks me accordingly.

Many dentists working alone become more or less disgusted with their business. The fact is, the business is all right, but the man needs the company of his kind. I would say it is a pretty good scheme for a dentist to have an assistant, or several of them, and do a certain portion of his work through the hands of others.

This lets him get out and get the fresh air. It is a wonderful thing to discover that you can get away from your office and find things going along all right when you come back. It reduces one's ego to the proper normal state.

The fact, too, of having an assistant gives you somebody to discuss your plans with, and by talking things over with some one else you make them clear to yourself. You cannot discuss the inmost phases of dentistry with a layman. You have to have somebody who is pretty nearly as big as you are yourself.

And I have noticed where there are two good dentists working together in an office in a small town they will attract twice as much business as one. There is a sort of spiritual law that controls this thing.

Dentists work in such a small space—doing business in an aperture—they are prone to become narrow and whimsical, and bigoted, because at the last—I suppose this will not be disputed—the dentist is only a man.

However, there are men who work with a microscope as did Darwin, for many years, and many other big men who might be named, yet these men managed to get away from their confining work every day out into the open, across the country off the sidewalk, and thus they kept their vision broad and generous.

I want every dentist not only to be a good dentist, but to be a big man as well. And get rid absolutely of all the little professional jealousies that are apt to corrode one's heart and sap one's zeal.

Dentistry is a new profession. It is just coming in, and it is an expanding profession. It is growing with the intelligence of the people; and the ability of people to pay and their inclination to pay, I am fully assured, is on the uplift, and growing bigger and better every day.

God and Nature and Society are on the side of the dentist, and it is for the dentist to be worthy of the honors that are surely coming his way. And these honors mean increased responsibility. There is no such thing

as corraling honors, capturing them, and enjoying them. We keep things by giving them away.

The good dentist gives to society a splendid service.

And the reward comes as a matter of course.—New York *American.*

ABOUT DENTISTS.*
HAVE YOU BEEN TO SEE HIM LATELY?

In no field of modern science has greater strides been made than in dentistry. The dentist's field is composed of a large acreage, he has a strong pull, and the openings that are presented to him are varied and many of them large in possibilities. He usually does his work with great pains, and has made a howling success of the business.

In ancient times men were selected in each community to extract teeth, which was done by striking them with an axe, and if by chance the tooth was extracted without killing the patient it was an accident and the man who performed the feat was called an accidentist. In later years, improved by time and enlightenment, a hammer and a cold chisel were used and the prefix was dropped making him a plain dentist.

When a dentist gets a looking glass, one hand and a pair of forceps in your mouth and then asks if it hurts, proper etiquette is to make a slight bow, dropping the hands to the side and say "Quite excessively, yes," or, "Yes, indeed, excruciatingly so." This always makes him smile and is a feat in articulation that you are always proud of. A hollow tooth is always a delight to a dentist, because nature abhors a vacuum, and he is a child of nature. A dentist's chief instruments of torture are gimlets, brads, punches, picks, spikes, prods, and pries, with several others that he uses in extreme cases. The dentist does not use so many large words as the regular practising physician, but he has a few that can be articulated safely where a part of the teeth are missing in each jaw. These are hard to spell but they get right at the root of things when you do spell them.

A dentist is never superficial; he gets right at the root of the matter. They are like the sails of a boat, they draw and fill. When he draws it is not on his imagination nor on yours—it is real. He is a man of push. When he pushes his forceps into your mouth, tongue cannot express your feelings. There is no room for it to do so. Good dentists are rare, but this is not right. They should be boiled clear through. Dentists would not use so many hard words as they do if they had to spell them first.

* By courtesy of someone unknown.

Dentists have no license to murder; that is the reason they always stop pulling just before you are dead.

A dentist has no right to put more than one hand in your mouth at the same time. He has to keep one free to scratch his nose with. However, there is no law that prevents him from changing hands at will. It takes but a few minutes to reduce a cavity to the minimum and about the same time to reduce your pocket book to—a "thank ye, mum."

It is better to be a horse doctor than a dentist, for when a horse doctor's patients kick he can rope 'em; when a dentist's patients kick he has to put more looking glasses in their mouths and tell them a pleasant story. When a horse doctor loses his patience he says cuss words. When a dentist loses his he is sued for $10,000 damages for malpractice and kicked out of the church. Yes, it is better to be a horse doctor than a dentist.

After all dentists are useful. They are the only ones who will stand still and let you tell all you want about that tooth—how it aches by spells but not when you are within one mile of a dentist. They don't pretend to cure by absent treatment: in fact they want to be present to an overwhelming extent. You need never lose a single tooth, or a double one if you tell the dentist about them. He will tell you that double tooth will come out singly, and that the biggest fool on earth has just as many wisdom teeth as the philosopher. If a dentist has a secret by which he can make a front tooth look better than anyone else can, he can't keep the secret, for it is soon in everybody's mouth. When a dentist dies it is usually from old age.—BAILY, *The Britt Tribune*, Britt, Iowa.

"Did you get it all?" asked the Doctor of his assistant, after the latter has made a last strenuous effort to remove the offending tooth.

"Yes" replied the assistant, nonchalantly, "all but the root."—W. A. K.

Two little girls had just had some teeth extracted and were overheard berating the one who removed them. "I don't see why you have to pay the dentist for hurting you so," said Elsie, indignantly. "No," responded Mabel, "and besides, he keeps your teeth, too."—W. A. K.

A local M. D., a husky and happy-go-lucky individual, sometimes extracts teeth—seems to like it. Recently he got hold of the wrong member and removed a sound tooth, leaving the aching one. Later on being reminded of the fact by the returning patient, he said, laughing, "Oh, well, I know it, I know it, I can get the other one any time."—W. A. K.

BROTHER BILL'S LETTERS

My Dear Niece:

I've read with much interest the letters between our husbands on the subject of saving money, and I'm real glad that you wrote me just as you did. For while the men think they do the saving and the women do the spending, I think it is generally the other way about. And when any money is saved by a family, you will generally find the woman saving a great part of it.

Probably this has to be so. I know that my husband is away at the office all day. And when he comes home at night, perhaps tired out by a hard day, he doesn't want to be bothered about little things the family needs.

And when I take him shopping, it makes me laugh. If one of the boys needs a suit he walks into a store and says, "I want a suit for this boy." And when he sees one he likes, he reaches for his pocket and says, "How much is it?"

Any woman could tell him that is a wasteful way to buy. Suits of the same material and make are cheaper one day than another. And they are much cheaper in some stores than in others. And in a good suit one can often save $5 or $10 by merely going about it intelligently. But, while Bill wants to save money, and tries hard in ways that a man knows about, he doesn't seem to know how to do it in other lines.

Your task and mine in saving money has been made much more difficult of late years by the advance in price of the necessities of life. When we were married I used to pay fifty cents a bushel for potatoes; now I pay $1.10. I formerly paid from 25c. to 40c. for a fowl, now I pay from 90c. to $1.20. And in many other items which you know as well as I, the price is much higher. And this makes it much harder to set the table on anything like the same expenditure.

But I think our greatest difficulty comes from the change in our tastes with the possession of more money. They tell about a thief coming silently in the night, but he doesn't come so silently as this change in our notions. Nor are his visits likely to prove half so expensive.

When we were married our possessions were few in number and very modest in quality. I remember as well as can be our first dining room carpet. It was a white and green ingrain, bought at a sale for $5.65. I shall never be happier than I was as I sewed the seams of that carpet, and stitched into it happiness and hope for the future. The rug under my feet would buy 50 such carpets, but it does not mean to me half as much as that little carpet did. And it never will.

I write about those two pieces of floor covering merely as extremes of the points I want to make. When Bill and I first came to our senses about financial management, he gave me $50 a month to run the house

"I shall never be happier than I was when I sewed the seams of that carpet"

on. That had to set the table and pay the hired girl. It did too. In those days hired girls got $2.50 per week. I now pay over $6. Our table was set well but plainly. I bought the less expensive meats, finding them quite as wholesome when properly cooked, as porterhouse roasts and steaks. And I watched all the corners myself.

With the coming of the children I had new duties to perform. And some of the corners were not so well watched. The moment our vigilance relaxed, the expenses increased without any corresponding increase in quality of service. My house allowance had to be increased from time to time.

But some insidious habits were creeping upon us. And soon they began to show in ways that had nothing to do with my part of the living.

Bill was making more money and we began to taste a few things we had never been able to afford. He paid more for his suits and I more for my dresses. We went to restaurants that we had never dared visit. The gowns and music and the general glitter of the places were very attractive to us. It doesn't take very much of this sort of thing to consume a lot of money. And for a time we spent more than we should. After a time we came to our senses and realized that these things were still beyond our limit and must be postponed till some future time.

I think this period of renunciation was one of the hardest we ever passed through. We were part of a jolly crowd that did these things. The other members of the crowd couldn't afford these things as well as we could. We learned this when one member after another came to Bill to borrow $100 to tide him over to the end of the month. We learned that about the 20th of each month each of the men had spent all he had, and had to live on credit till the first of the next month. And when a slight sickness came to two of them, it brought them hard times.

This was a good deal of a shock to Bill and me, because the habit of saving was pretty firmly grounded and the nest egg in the bank was steadily growing. The fight between the desire to get ahead and the temptations was hard and long. I remember particularly one evening when the crowd came for us to go to the neighboring city to a dinner and show. It meant $15 for the fares, dinner and seats. We both wanted to go, but Bill got me off in a corner and said, "I'd like immensely to go dear, but we ought not to. We cannot afford it." If he just hadn't put that "dear," in I expect I'd have protested. But I told them quite sweetly that we couldn't go. It wasn't so hard just then, but in about an hour or so, when I got to thinking about the brilliant restaurant and jolly company and flowers and music, I felt mighty bad. I guess Bill was thinking about the same things, because he was pretty glum. And we both went to bed thoroughly dissatisfied. The next morning we talked it all out calmly, as we did all our difficulties, and I never felt quite so bad again. In fact some misfortunes which befell certain members of that crowd shortly afterward and were made doubly hard by lack of ready money, showed me the folly of their course.

Other instances of self denial came hard, but Bill took a course that helped me a good deal. He told me every detail of the business. And whenever $100 went into the savings fund, he told me about it. When a little money came in on interest he explained how it came and how the amount of interest depended on the amount of principal. Then he wanted to buy a few shares of a certain stock and we watched the daily papers for quotations. Finally we bought. Then we watched it go a little lower and finally a little higher and at last sold out at a net profit

of $54. That was the first money we made and I got very much interested. Before that we had merely saved.

I always thought that was a clever trick of Bill's to interest me in what we had rather than what we were going without. It made me very happy and I don't remember the selfdenial times after that. Once we bought stock that went up till we had a profit of $500. Experts advised us not to sell and we didn't and it went back down and we didn't make the $500 then, though we did it later. I don't even remember what we did evenings then, or whether I went without anything we wanted. I

"We were a part of a jolly crowd that did these things"

think most any woman could be kept very happy in this way if only husbands would take the pains.

And then came a time that filled my cup with happiness. Bill took us to Europe for three months, and I saw a lot of places I'd heard about but never expected to see. And he showed me that the persistent economy had made it possible. And I wrote postals home to the old crowd telling what good times I was having.

I'm still keeping up the fight and it's harder than ever. For tastes advance faster than income. I pay $50 or $60 now for a suit, when I want to pay $75 or $100. I live in a small house when I should like a big one. I have modest furniture when I'd like fine furniture. And I am busy all the time in ways that I'd like to employ another maid to look after.

But we still live on just about the same proportion of our income and I want us to until that happy day when Bill can let up somewhat on the daily grind. And that cannot come till money enough is invested in sound income bringing securities to keep us through old age.

I'm as happy as can be in the activities of my home. When I talk to women who are unhappy, I come home and look at the kiddies and all the things Bill and I have worked for, and I thank God we have followed just the course we have. The hard spots of the past are happy spots now.

I'm glad your husband is really taking you into partnership. You'll be very happy doing your share. And life will be happier and richer even if it isn't easier right away.

But watch the cost of high living and fight its temptations till you master them. And may you both be as happy as Bill and I.

Yours truly,

Mrs. Bill

THE POOR DOCTOR AND THE POOR PUBLIC

The popular notion of the physician's great earnings is, of course, as most popular notions are, pure bosh. The "people" judge by the few eminent physicians and surgeons, by the exceptions. A very, very few physicians make a hundred thousand dollars a year; a few more make fifty and twenty-five thousand; but ten thousand is considered an excellent income for a physician and only a small percentage reach it; probably not more than one in a hundred. The vast majority struggles along on between a thousand and three thousand a year—certainly not a sum to be envious of, especially when we take into consideration the long preparatory years necessary to become entitled to practice.

Yes, the physician's lot is a hard one, and we fear, is getting, for the rank and file, harder and harder as the years pass. This is true not only of the United States, but of the world in general. In fact, in Europe the struggle is much fiercer, and the physician's lot much harder.—*Critic and Guide.*

PRACTICAL HINTS

[This department is in charge of Dr. V. C. Smedley, 604 California Bldg., Denver, Colo. To avoid unnecessary delay, Hints, Questions, and Answers should be sent direct to him.]*

TREATMENT OF SHOCK OR COLLAPSE.—In case of faintness, shock or collapse, turn electric fan full in patient's face. It works like a charm.—C. G. HAMILTON, D.D.S., DENVER, COLO.

FOR HOLDING STRIP ON LABIAL SYNTHETIC FILLINGS.—A little warmed impression compound pressed to conform to labial of tooth surface which can be done before the cavity is prepared, gives it a very convenient knob for holding celluloid strip in place while filling is setting.—J. N. GREENBERG, D.D.S.. MAYVILLE, N. D.

WOOD ALCOHOL FOR BURNER FOR VULCANIZING.—After your kerosene burner for vulcanizer has smoked until you are disgusted, throw away your wick and clean your burner, then try wood alcohol.—J. H SAMUEL, D.D.S., FOWLER, COLO.

POINTERS ON THE BRIDGE SYSTEM IN CROWN WORK.—On second swaging, or previous to marking of swaged crown to conform to cervical margin of metal die (as determined by trial band), use foot plugger in mallet, packing swaged crown against cervical margin of die. In this manner, perfect adaptation of swaged crown and die may be obtained.—W. I. PRIME, D.D.S., LACONIA, N. H.

TO STRENGTHEN THE THIN PARTS OF CARVING COMPOUND.—To prevent carving compound from melting while pouring metal on copper and wax model while in the ring, fill copper crown with carving compound, before pouring metal. This strengthens the thin parts of carving compound, should there be any after carving the cusps in articulation.—W. I. PRIME, D.D.S., LACONIA, N. H.

A GOOD STICKY WAX.—Buy a five-cent cake of violin rosin, melt it in a tin box over Bunsen flame, add yellow beeswax until the desired "stickiness" is obtained. Get your fingers in it and you will know.—W. I. PRIME, D.D.S., LACONIA, N. H.

*In order to make this department as live, entertaining and helpful as possible, questions and answers, as well as hints of a practical nature, are solicited.

To Keep Flasks Clean.—Place a small quantity of sodium bicarbonate in the vulcanizer and your flasks will be readily and easily cleaned after using. The use of flask tongs aids in keeping the hands clean, and with them hot flasks are handled to better advantage.—H. E. Davis, *Dental Review* (*Broomell's "Practical Dentistry"*).

Liquid Silex.—Instead of paying a big price for a small bottle of "liquid silex" at the dental depot, get a quart of silicate of soda, which is the same thing, and can be had at any wholesale drug house for forty cents.—J. G. Templeton, in *Dental Review* (*Broomell's "Practical Dentistry"*).

To Remove Vulcanite from Between the Teeth.—Mount a stiff fine needle in a small handle or broach holder; sharpen on two sides and you have a useful little tool.—A. E. H. Leister, *Items of Interest* (*Broomell's "Practical Dentistry"*).

Removal of Gum Tissue from the Cavity.—Apply trichloracetic acid, which destroys all organic matter (but not inorganic). It does not matter if it should touch the pulp. In a quarter of an hour you can cut away without any pain. In cases of difficult eruption of third molars, put a few crystals between gum and tooth.—*Broomell Dentistry by Practical Dentists.*

Making Gutta-percha Points more Rigid.— If difficulty is found in placing long, thin gutta-percha points in position because they are limber, they should be placed for a few minutes in ice-water. Thus chilled they become more rigid.—A. J. Cottrell, *Dental Brief* (*The Manufacturers' Dental Quarterly*).

Mentho-Phenol.—Melt together three parts menthol crystals with one part phenol crystals. This is useful as an analgesic, applied to an aching tooth with an exposed pulp or to a painful socket after tooth extraction. It has marked antiseptic properties, but is not disinfectant in the degree required for treatment of putrescent conditions.—Dr. J. Morgan Howe, *The Dental Brief* (*The Manufacturers' Dental Quarterly*).

Preparing Vital Teeth for Crowning.—Dr. J. C. Gault, St. Louis, Mo., suggests that it is best when preparing vital teeth for crowning, where considerable tooth tissue must be removed, to do all the grinding at the first sitting and then paint the tooth with a ten-per-cent. solution of silver nitrate. He usually finds that at a second sitting the teeth are

much more sensitive to grinding. He is not in favor of always devitalizing a tooth preparatory to crowning, preferring not to do so when a tooth is sound and can be properly prepared without.—*The Dental Brief* (*The Manufacturers' Dental Quarterly*).

A PRACTICAL SPATULA FOR INSERTING APPROXIMAL SILICATE CEMENT FILLINGS.—If, in filling approximal cavities with silicate cement, no tantalum spatula is at hand, and bone or agate spatulas prove too thick to obtain good condensation and contour, a stick of hickory wood is whittled into the shape of a spatula of the desired thickness. This wood is dense and supple enough to afford entire satisfaction.—C. MUSSAT, *Journal Odontologique, The Dental Cosmos* (*The Manufacturers' Dental Quarterly*).

PERMANENT FIRST MOLARS.—So often children come to us when these molars have not yet fully erupted, and we notice the enamel lobes have not properly united; there are fissures and pits, and if they are not taken care of there will be decay. The thing to do is to get them clean and dry, and work into the pits and fissures a little oxyphosphate of zinc, or better oxyphosphate of copper, and hold it down with the finger thinly coated with vaseline. By keeping the fissures closed, it will have a very material effect in keeping these teeth from decaying.—G. W. DITTMAR, D. D. S., CHICAGO.—*The Dental Review.*

[I think that when we render this particular service, and in making all occlusal restoration, we should keep it clearly in mind that the inclined planes of the cusps and also the normal grooves and sulci should not be obliterated, as they are essential in guiding the erupting teeth to normal occlusion and in maintaining same thereafter. V. C. S.]

AN OLD BUR sharpened to a bevel edge is good to cut out a gold filling or to make retaining pits.—*The Manufacturers' Dental Quarterly.*

Answer.—In the matter of the recipe for sandarac varnish given on page 610 of the October DIGEST.—If a wide vial is used, and a piece of open weave material like bonnet lace, is inserted in its mouth, so that it dips below the surface of the alcohol, the gum sandarac suspended therein, will be found to dissolve very quickly.

If the sandarac is at the bottom of the vial, that which dissolves forms a heavy syrupy solution and prevents the alcohol above from reaching the undissolved gum.—GEO. B. SNOW, D.D.S., LONG BEACH, CAL.

DENTAL LIBRARY UNIVERSITY OF ILLINOIS PROPERTY OF DON'T MUTILATE OR REMOVE

SOME COMMON FACIAL DEFORMITIES FROM AN ORTHODONTIC STANDPOINT

By H. Carlyle Pollock, D.D.S., of St. Louis, Mo.

Orthodontia is an exact science which concerns the occlusion of the teeth and its influence upon the development of the face. The above is not a definition but a composite idea of the scope of orthodontia. It is a branch of dentistry and since its development deformities of the lower third of the face may be largely corrected.

Without surgical interference operators are able to cause receding chins and upper front teeth to grow into their normal positions.

This is brought about by a combination of mechanical apparatus, which can be adjusted to a thousandth of an inch. Small platinum springs are adjusted to the mouth by means of the teeth and made to exert slow gentle pressure, which in turn causes the tissues to respond and to grow in the direction in which the pressure is applied. The physical contour of faces is thus rearranged by changing an unsightly mouth into one which is pleasing, by causing a receding chin to grow forward, which has been arrested in its development, or by retracting a lower jaw which has advanced forward in its growth, completely out of harmony with the remainder of the face.

Not so many years ago these deformities were accepted as a perversion of nature from which there could be no relief, and a child so afflicted was condemned to go through life with this distressing mark of abnormality upon the face. Fortunately in the present day these conditions are corrected absolutely (thanks to men who have the perseverance to develop all branches of science). In the era in which we now live, if a parent allows a child to grow to manhood or womanhood with these facial defects, it is because he is not sufficiently informed upon the subject, or is derelict in the discharge of his duty.

Case I* illustrates a little girl afflicted with a condition commonly called "squirrel mouth." A plaster cast made of the interior of the mouth shows the upper teeth projecting an inch in advance of the lower ones, which were responsible for considerable abnormal development about the mouth region. Orthodontia went to the rescue of this individual—the lower jaw was stressed against the upper one, and by slow

*From clinic of Angle School of Orthodontia (See page 49).

gentle pressure was pulled imperceptibly forward. The active treatment required a number of months, but in the end a beautiful result was accomplished. At present, a firm and straight chin rests beneath the upper lip, and the girl is virtually equipped with a face in which the relative parts are in harmony.

As a contrast, the opposite variation from the normal occurs not infrequently (Cases II and III). In cases where the lower jaw protrudes in advance of the upper—the lower teeth being fixed in their position in front of the upper—the chin is thrust conspicuously forward and the face becomes malformed. Such was the type of condition presented by a patient (Case II) of Dr. A. H. Ketcham, of Denver. She would have been normal had it not been for the improper position of the teeth, which in turn were causing a deformity of the jaws. The process of masticating food with the teeth in this position had been going on for years, the results of which were obvious. This disfigurement was not accepted as a condition which could not be corrected. She applied for orthodontic treatment, and the upper teeth were slowly made to occupy a position outside the lower arch. This process required two years' time, periodic visits being made to the orthodontist. To-day her face has a pleasing expression, the opposite of the forbidding and harsh look before the correction was made.

Sometimes one encounters an Apollo, with fine eyes and forehead, but the impression is ruined when once the mouth is opened and an array of irregular and over-crowded teeth are revealed. This condition is caused by the lack of development of the bony structure of the jaw. There is not sufficient size in the maxilla and mandible to afford places for all the teeth in their proper position. This condition invariably becomes exaggerated instead of remedied. Formerly, the only remedy would have been to extract a number of the teeth, though they might be perfectly sound, thus leaving the victim with an incomplete dental supply and its ensuing evils of malnutrition and indigestion, and usually a more unsightly mouth than existed before the teeth were extracted.

To-day, science undertakes no less a task than that of enlarging the jaws in order to afford space for the teeth. When one recalls that the jaws are based upon solid bone tissue, the undertaking would at first glance seem to be formidable; but those engaged in this work have learned that by application of gentle pressure the osteoblasts may be called upon to respond. As the space is gained, the overlapping teeth are pressed back into their proper positions, and finally the patient, who formerly dreaded to expose the teeth, may open the mouth and display symmetrical alignment. It is known to all how important a part the configuration of the jaws and teeth play in the symmetry of the face. The corners of the

mouth, for instance, should be strongly supported by four canine teeth. It is a very common condition for these teeth to be out of alignment, and when in such position are commonly called "tusks." These teeth being the last to erupt (at about twelve years of age) cannot find sufficient room in the arch, so are forced to thrust themselves through the gum, above their contemporaries. The lines about the angles of the mouth are thus greatly distorted. The old process of extracting these "tusks" left the angles of the mouth without support and caused deep lines to form early in life.

Parents of children are surprised when they learn of the cause of these conditions which are so common at the present day. The type

Case II.—At the present time

characterized by receding chin and protruding upper front teeth can usually be traced to mouth-breathing, which is often caused by adenoid growths in the posterior portion of the nose. The constant breathing through the mouth by a growing child works havoc with the development of the jaws and teeth, and every means should be employed to stop this unless one is indifferent to the development of the child. It is easy for one with an experienced eye to spot the disaster worked in the eruption of teeth and the development of the jaws by mouth-breathing. This defect is so common that even one who is not experienced must have observed it on every hand.

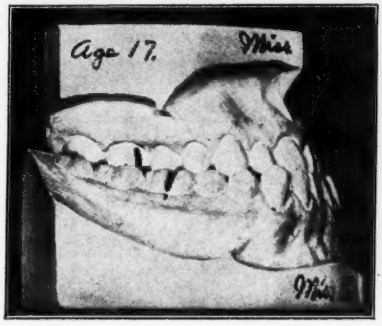
There are other causes which might be mentioned. The nursing bottle is sometimes responsible for deficient growth. The jaws are

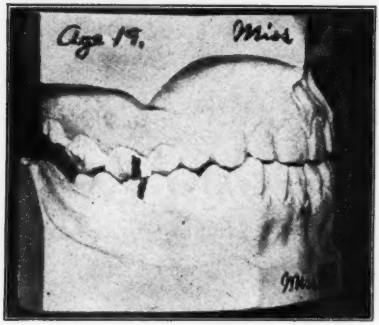
Case I.—Typical mouth-breather. Before correction.*

Case I.—After correction. Formerly mouth-breather

Case II.—Profile before correction

Case II.—Profile after correction





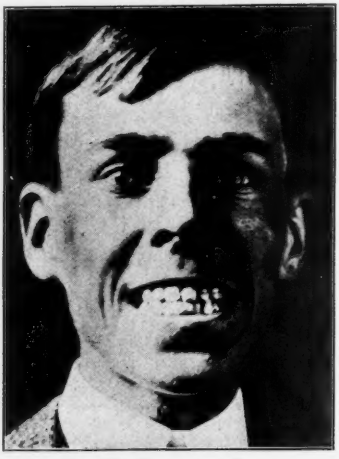
Case II.—Plaster casts of mouth showing teeth and jaws before correction and after. (Note the response in growth of bone in maxilla.)

*Clinic of Angle School of Orthodontia.

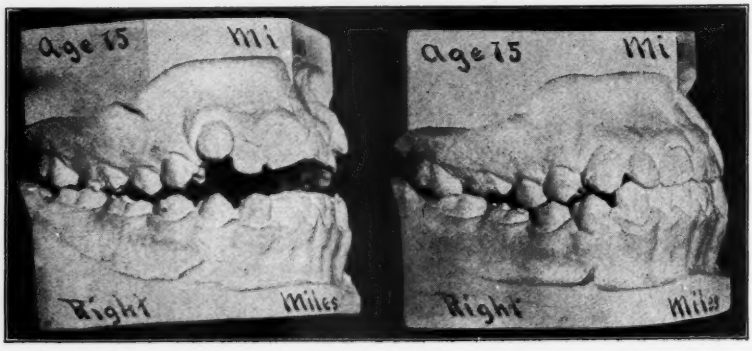
Case III.—Before correction

Case III.—After correction

Case IV.—Caused by tongue habit



Case IV.—Same corrected



robbed of the normal functional activity which they employ in natural nursing, consequently they do not profit by that rapid growth which is so manifest at the nursing period. Children often acquire the habit of thrusting the tongue between the teeth, which becomes the constant position for the tongue; as a consequence, the teeth are never permitted to grow together in the front of the mouth. The back molars may be in perfect contact, but a space exists in the biting portion just the size of the tongue (Case IV). In this type of case there is usually a lisping in the speech, as the tongue is unable to control the volume of air escaping between the front teeth. Sucking the thumb is a habit easily acquired by young children, and which gradually develops on account of the slow ideation of the child. You ask a question beyond the comprehension of the youngster; it hangs its head, puts its thumb in its mouth and digs its toe into the sand—solace of some kind is derived from the thumb being placed in the mouth. The child seems to like it, it seems to act as a mental placebo. Unconsciously the habit grows and, if persisted in, after a time a protrusion of the upper front teeth will be noted, and at the same time a retrusion of the lower. Fortunately, most children overcome this habit before a great deal of damage has been wrought, and nature is able to cope with the situation. If, however, the child does not desist from this practice, it may be necessary to resort to correction. There are numerous other causes of these deformities of more or less consequence including injury; but after all, cases are occasionally seen in which the cause seems rather obscure, a fact that forces us to the conclusion that heredity must be reckoned with.

A California orthodontist reports having visited a tribe of American Indians, and while there having examined the teeth of many of them, and also studied their habits. Among them were very intelligent men, who believed in living the simple life, and whose diet consisted of very plain and coarse foods. He failed to find one case which needed any correction of the teeth and jaws. This report, in contrast to a report which might be compiled from our American cities, would afford food for thought to all observing people.

Alban Oppenheim, of Vienna, conducts experiments upon monkeys in which the jaws and teeth are shifted. Monkeys are used on account of the similarity of the dental apparatus to that of man. High chairs have been provided, and they are given the same painstaking care which is given to human beings. After sufficient time has elapsed for them to become accustomed to their new surroundings, they prove to be ideal patients, and seem to enjoy the activities of the clinic.

These tests have proved that Nature herself can be enlisted as an ally in the treatment of these cases. It was shown that when pressure

is applied to a bone, the bone cells themselves set to work to manufacture the connective-tissue required for the increase in size, and will perform the task if granted sufficient time. If it be required to pull a chin forward, Nature may be depended upon to perform the task, if slowly and gently stimulated to cellular activity.

Having performed many creditable corrections, practitioners are now giving their attention to the more important field of prevention. One experienced in the growth and development of these cases is able to recognize "the handwriting on the wall," and arrest the defects in the early stages of development.

Nature makes a heroic effort to develop all parts of the human body to its normal state, and succeeds in her efforts unless thwarted by some influence which is beyond her control, or a force which she cannot conquer. She is able to overcome disease and build sound structures on insecure foundation in many instances, but we know there is a limit to her possibilities. If a foreign influence has interfered with the normal activities of Nature, fortunately science has made it possible for the hand of man to enter into the argument and assist Nature once more to gain her foothold upon the right track. This intricate phenomenon, once set in motion, and all things being equal, indicates the highest type of efficiency, and the skill of man can be utilized only as her assistant—*Interstate Medical Journal.*

PROSTHETIC DENTISTRY

THE GYSI ARTICULATOR.—This instrument was so thoroughly discussed at the last meeting of this society that it needs only a word of commendation by those who have studied its merits. It is a revelation of accuracy in reproducing the various movements of the jaws. We shall not take the time to go into further discussion of its worth; it has been proved that a great advancement has been made in the construction of artificial dentures through the development of this articulator. The Gysi Adaptable is suited to the use of the thoughtful practitioner who is willing to devote sufficient time to master the manipulation of its parts.

DR. WILLIAMS'S CLASSIFICATION OF TEETH.—This theory has completely upset all previous ones in regard to the classification of the natural teeth and the manufacture of artificial substitutes.

Dr. Williams has undoubtedly proved that there is no such thing as temperamental forms of teeth; that there are no racial types of teeth; that nature does not always produce teeth which harmonize with the features and the face; that a scientific and artistic system of artificial

teeth cannot be produced by copying sets of natural ones; and that there are three typal forms of incisors, as follows:

Class 1, characterized by parallel or nearly parallel lines which represent the proximal surfaces of these teeth for half or more than half of their length from the incisal edges.

Class 2. The parallel lines converge so markedly that they would meet in most instances at a point near the end of the root.

Class 3. This is known by a delicate, double-curved line on the disto-proximal surface and sometimes, though less frequently, on the mesial surface. All of the angles and surfaces of this class are more rounded and graceful.

"These primitive forms of teeth," says Dr. Williams, "are the same in different races, and this proved fact not only disproves a racial type of tooth, but it proves beyond question that there is no such thing as a temperamental type."

After an exhausted study of the teeth of many skulls of nearly all races, even going back to the Bronze Age, Dr. Williams makes this statement in regard to the harmony of the teeth and the face: "It would probably express an important truth to say that Nature always seems to be striving to reach or realize harmony, but rarely achieving a perfect success and sometimes going very wide of the mark." And again, "Any given forms of teeth are not peculiar to any race neither do they bear any necessary relation to the shape and size of the skull. In all races there is community of typal tooth forms."

Williams-Gysi Artificial Teeth.—Permit me to quote again from Dr. Williams's paper in order to show the underlying principles which inspired the creation of the Truebite anatomical moulds: "While all art must be founded on the most intimate, penetrating and thorough study of nature, that it may be true to life, yet truth to life means much more than an indiscriminate consideration and an acceptance of a mere welter of facts. It means the appreciation and understanding of the relative value of facts and the power of faculty of discriminating between what is of small value and what is important, relevant, and finally that which is really vital to the subject."

Dr. Williams declares that there are comparatively few forms of artificial teeth required, because there are only a few types of human faces. "The aim in designing artificial teeth should always be to maintain character in the tooth by keeping its typal or class features dominant. The object is to establish harmony between the outline or form of a tooth and the outline or form of the face. If the lines and curves of the tooth

balance or are in harmony with the lines and the curves of the face, the highest degree of perfection attainable has been reached. The application of the three typal classes of teeth to the three types of faces are thus a harmonizing blending of the two.

SOME OF THE FEATURES OF THE NEW MOULDS.—The enamel markings on the labial surfaces diffuse the light and soften and enhance the appearance of these teeth.

The tiny horizontal striations prohibit the reflection of lighting solid blocks, thus softening both the high lights and the shadows. The occlusal surfaces of the bicuspids and molars which are designed by Dr. Gysi are so formed that the food is properly prepared by a triturating force of from 15 to 20 pounds. Professor Gysi has also joined the two bicuspids and the two molars on each side in the form of a single block. The compensating and lateral curves are accurately worked out in the occlusal surfaces of these blocks, so that their antagonization in full sets is very simply made.

CLASSIFICATION OF THE HUMAN FACE.—Class 1 comprises the square type of face, in which the sides are parallel or nearly so, and in which the curves at the angles of the jaw are so abrupt as to give the face a square appearance. This type of face, with its variations in length and width, harmonizes with the outlines of the teeth of class 1. Class 2, is the pyramidal or tapering face, in which the forehead is very broad, with the outlines of the face converging toward the chin; the class 2 moulds are especially adapted to this type of face. Class 3 is the ovoid face, which has the greatest width in the lower part, the outline frequently exhibiting compound curves; the class 3 mould is designed for this type of face.—*The Dental Cosmos,* November, p. 1267.

MY PLEDGE

First I pledge myself not to continue to think ill of any man. That I shall at times and on the impulse think ill of people is only an evidence of my own frailty, and this I pledge myself to overcome in so far as I recognize it, and as soon as I recognize it.

I pledge myself to help the unfortunate to help themselves, but I shall not add to their misfortune by assuming a burden which properly belongs to them. If perchance I am stronger than others I shall not vaunt my strength by a vulgar display of paternalism over them. If I am weaker than others then shall I not cringe at their feet by permitting them to accept a responsibility which is mine.

I pledge myself to independence and self-reliance except where the

fact of leaning on others is for their needed development. I accept my own destiny without fear or favor.

I pledge myself to tolerance, except that I must not tolerate anything in myself which is low or mean or which I should not wish the world to see.

I pledge myself not to offend others unless by thus offending I may show them a real fault and effect a real remedy. I shall criticize no man for the sake of criticism but I shall not withhold criticism where it will do good—the only condition being that I must first be sure that it will do good.

I pledge myself not to judge any man by external evidence, not failing to remember that there is little evidence which is not external.

I pledge myself to try to do some good deed each day whereby my fellowman may be made happier, and I make this pledge realizing the exceeding great difficulty of fulfilling it owing to the rapid succession of days and the natural laxity of human nature—my own in particular.

I pledge myself to think good thoughts in so far as I can control my thinking, not forgetting that I must change my thinking frequently to keep this pledge.

I pledge myself to look on all sides of every question which may come up for my consideration, studiously avoiding the practice all too common of seeing only one side of a question—the one which is to one's own individual advantage.

I pledge myself above all things not to make myself a burden to others by magnifying my misfortunes or by constantly complaining at fate. The ills I have I shall strive to bear patiently, and seek to hide them from the world.

I pledge myself to live a clean life, not merely upright in the eyes of the law but fulfilling as nearly as I may the essence of right living as embodied in love, charity and justice.

And I make no further pledge, conscious of the fact that my natural limitations will make it sufficiently difficult to live up to these.—*The Dental Review.*

He who would be great must make his humility his foundation.

The wise man is free from self-display, from self-conceit, from self-glorification, from self-exaltation; therefore rise superior to all.

Be honest without being mean. Be upright without being punctilious. Be brilliant without being showy.—LAO TZU.

AN EPITOME OF CURRENT DENTAL LITERATURE

[*Items of Interest*, December 1914]

DESENSITIZING PASTE

A NEW, SAFE AND RELIABLE REMEDY FOR HYPERSENSITIVE DENTIN

By J. P. Buckley, Ph. G., D.D.S.

Formula for desensitizing paste.

Neothesin	.11 parts
Thymol	.12 parts
Trioxymethylen	.77 parts

One grain of which is sufficient for about 15 applications.

The desensitizing effect of formaldehyde has been known for some time. In this paste the action of the gas is controlled and the irritating effects modified and its stability maintained.

Neothesin is a new synthetic local anesthetic which is used to quickly prevent the toothache caused by the irritating effects of the formaldehyde gas.

Thymol is used for its penetrating disinfectant properties.

ACTION

"The neothesin is applied to the exposed dentinal fibrillæ which quickly paralyzes the exposed ends. The thymol volatilizes and permeates the softened dentin. The heat of the body gradually liberates formaldhyde from the trioxymethylen which gas diffuses through the decayed dentin and combines chemically with the disorganized products. The dentin is not only desensitized but sterilized. The vitality of the fibrillæ is destroyed in the area affected. But the sound dentin is not destroyed to any dangerous depth. In the preparation of the cavity, in the average case, the dentin affected by the remedy is practically all removed. If it is not, I know from my experience with the paste that the vitality of the fibres is subsequently restored, for after a few weeks sensation returns. While this regeneration of the fibrillæ is being brought about, the tooth may develop slight thermal sensitiveness which lasts for about a week. This occurs only in a small percentage of cases. I simply mention it here that the operator may know the cause and that it will be of short duration should such sensitiveness develop.

INDICATIONS FOR USE OF PASTE

Desensitizing paste may be used with perfect safety in all cases of hypersensitive dentin where the pulp of the tooth is not diseased to the extent of necessitating the removal of the organ because of its pathology.

It is not necessary to employ the remedy in every case of cavity preparation. Where the pain is not great, and where the patient is willing to endure the small amount, no therapeutic remedy is needed; but every dentist has those cases where it is impossible to do satisfactory work because of the hypersensitiveness of the dentin. In all such cases the use of Desensitizing Paste will prove a blessing to humanity and a God-send to those earnest practitioners who have grown gray and nervous standing at the chair trying to properly prepare cavities in the teeth of hypersensitive patients.

DIRECTIONS FOR USING DESENSITIZING PASTE

In employing desensitizing paste, it is not necessary to remove any of the carious dentin that is at all sensitive. To attempt this often causes pain, and the remedy, if used at all, is intended to, and will, *absolutely eliminate all pain in cavity preparation.* The cavity and immediate tooth-surface should be dried with alcohol and a small amount of the paste sealed therein with a good cement. Better results will be obtained if the remedy is spread over the cavity surface. This can be accomplished with a ball of cotton held in the pliers. In gingival cavities, it is often necessary to flow the cement over the enamel surface, depending entirely on its adhesiveness to hold the paste on the softened tooth structure.

Twenty-four to forty-eight hours is sufficiently long to bring about complete desensitization, and this is the proper length of time to leave the remedy sealed in a tooth. However, no harm will follow if the paste should remain in the tooth for a longer period. The small amount employed will soon exert its full influence, after which no further action follows. An effort should be made to hermetically seal all the margins of the cavity—thus confining the action of the remedy to the dentin. If it is not accomplished, a certain amount of the formaldehyde gas may escape as it is liberated, in which case the dentin would not be so profoundly affected.

When it becomes necessary to prepare a cavity in practically sound dentin, as is frequently the case for bridgework and in superficial cavities, it may be necessary to make a second application of the paste in order to avoid all pain. In all cases where there is considerable decay, one application will be sufficient to desensitize the entire cavity. The depth to which the dentin is affected by the remedy will depend upon the condition of the dentin.

PRECAUTIONS

There are no special precautions to be observed in using Desensitizing Paste, so far as the remedy itself is concerned. It will not even destroy the gum tissue to any appreciable extent, at least if sealed in

contact with it. The dentist should understand that the remedy may not be used in those cases where the reading of the clinical symptoms would clearly indicate the removal of the pulp.

In deep seated cavities which approximate the pulp, yet where the organ is not diseased to the extent of necessitating its removal, the paste need not be applied to the entire cavity. In these cases extra small doses may be placed over only such areas as will need to be drilled subsequently in the cavity preparation and some anodyne like phenol compound, placed immediately over the pulp.

Should the paste be applied to a tooth in which the pulp is diseased it may make the tooth ache severely. For this apply aromatic spirits of ammonia on a pledget of cotton.

CAUTION IN RELATION TO DEATH OF PULPS

The paste MUST not be used in those teeth where the pulps while sensitive, are doomed to be devitalized. Nor must a filling be placed in close proximity to the pulp without insulating the pulp by suitable means, such as a cavity varnish or a non-irrigating cement.

"The dread of the dental chair, the severe nervous strain upon dentists, the failure of operative procedure upon vital teeth and the ruthless destruction of dental pulp with its frequent evil sequelæ, have been due more to hypersensitive dentin than to all other causes combined."

AN EXPANDING ROOT CANAL FILLING. By George Bailey Harris, D.D.S., Sc.M.

The author has produced a preparation consisting of powder and a liquid which when mixed to form a paste fulfills most of the requirements of a perfect root canal filling. The paste when mixed and introduced into the canals has a slight permanent expansion which fills the canal completely and adheres to the walls. The expanding property may be controlled by the manner of mixing and introduction, the quantity of powder added to the liquid and the temperature.

It is easily removed from the canal when necessary by opening into the pulp chamber, chilling the tooth with ice water or cold air and filling the canal chamber with the previously chilled liquid constituent of the paste. This is taken up by the filling. The tooth is then warmed by bodily heat or a blast of warm air. The filling then expands outward toward the crown of the tooth. Additional liquid can then be added and the entire filling removed quickly, painlessly and without forcing it through the foramen.

The filling is opaque to the X-ray which is a valuable property in determining whether or not all of the roots or root canals are thoroughly filled.

[*Oral Hygiene* December, 1914]

ORAL HYGIENE IN OKLAHOMA. By L. G. Mitchell, D.D.S., Oklahoma City, Oklahoma

A handful of busy men in a year and a half have aroused considerable interest in Oral Hygiene in Oklahoma.

The results accomplished are the following:

1. Secured the coöperation of the State School Board and State Board of Health.

2. Lectures have been presented to thirty County Institutes and State Normal Schools. Over "two thousand teachers pledged themselves to start the tooth brush drill in their schools."

3. Have prepared an oral hygiene exhibit for the State Board of Health which has been shown in a number of towns and cities including the state fair where lectures were given by local dentists.

4. The State University has been brought to appreciate "the importance of the work and has purchased a stereopticon for our use."

5. The preparation of several pages of instruction in oral hygiene for teachers. These are inserted in the "Course of Study" book, the official guide for all teachers except those in cities of the first class. These same pages are printed in pamphlet form for the teachers in the large cities.

The author believes lectures will promote oral hygiene better than the mere examination of children's teeth and the usual procedure that accompanies such examination.

EXCESSIVE USE OF ANTISEPTICS. By S. R. Ruggles, D.D.S., Portsmouth, Ohio

"It is the toxines, or rather the endo-toxines which kill, and how can you counteract their action with drugs?"

"In the light of our present knowledge we are at best making a guess when applying drugs in the customary manner." And because of this, in our treatments, living cells more often succumb before the bacteria.

Prolonged stimulation or irritation of delicate membranes by the constant application of drugs leads to death of tissue.

The author contrasts the inefficiency of essential oils as destroyers of bacteria with their irritating property.

He calls attention to the amount of free hydrochloride acid (5%) found in the ordinary peroxide of hydrogen and suggests that this is the cause of the absence of "the beautiful polish of enamel" in young subjects.

The use of normal salt solution is recommended. The experience of great surgeons and G. V. Black confirm its efficiency in irrigating septic wounds of the mouth is given, and the author concludes with:

"When we place less dependence in drugs and pay more attention to the end products of tissue waste, we will come nearer solving the riddle of medicine."

SCHOOL HYGIENE

The deplorable unsanitary schoolhouses, and the mental, moral, and physical diseases resulting therefrom are dwelt upon by J. N. Hurty, M.D., in "The Child and the School," and Burton S. Tefft in "Rural School Hygiene in Michigan."

"Six school children die in Indiana every school day! Thousands of school children will have headaches, toothaches, earaches, eyeaches, stomachaches due to the ignorance and neglect of parents and the state."

Bad food, bad teeth, bad water, bad outhouses, bad ventilation, bad arrangement of seats, desks, windows, and black boards, in insufficiently heated, lighted and cleansed school rooms—this state of affairs is to be found in the rural schools of Indiana, Michigan, and other states. Most if not all the preventable diseases may be traced to the condition mentioned. Yet the measure which would wipe out these evils, prevent this unnecessary loss of life is opposed and will continue to be opposed on the score of economy!

"All such schoolhouses are monuments to the ignorance and extravagance, yes wicknedness," of the people in every state which permits them to exist. "Every unsanitary schoolhouse is a blot upon the intelligence and civilization of the state. The author closes with:

"INDIANA CHILD'S CREED"

"Every child has the inalienable right to be born free from disease, free from deformity and with pure blood in its veins and arteries.

Every child has the inalienable right to be loved; to have its individuality respected; to be trained wisely in mind, body, and soul; to be protected from disease, from evil influences and evil persons; and to have a fair chance in life. In a word, "to be brought up in the fear and admonition of the Lord."

That state is delinquent which does not ceaselessly strive to secure these inalienable rights to its children."

[*The Dental Cosmos*, December, 1914]

THE PHYSICAL AND PROSTHETIC RELATIONSHIP IN RESTORED CARIOUS TEETH. By H. C. Register, M.D., D.D.S., Philadelphia, Pa.

"Absolute protection of the dentin and enamel is essential for enamel maintenance and dentin recuperation."

"The operator restores the tooth to functional contour, and gives protection from external environment and its influence upon the raw

tissues by mechanico-therapeutical protection; and the tooth recuperates itself through its own physical energy, *i.e.* by the formation of secondary dentine."

When dentine and enamel (whose capillary spaces, canals or interprismatic spaces are continuous with the dentinal tubes) "have been attacked or destroyed by caries," the remaining tissues can be and should be so protected as to encourage or permit them "to heal naturally by a process of calcification of the end fibrils"—called disposition of secondary dentine.

The author thinks less than 20 per cent. of the tooth restorations or fillings are successful for a period of ten years.

When the pulp is devitalized, the author maintains, "the pulp, dentine and enamel substance become inanimate or dead matter" and "such teeth are doomed even under the best conditions and treatment." "The crown is disintegrated sooner than its roots." "There is undoubtedly an endosmotic, semi-vital, protoplasmic influence extended to the dentine of the root through endosmotic action after the pulp is gone."

In cavity preparation "the enamel walls should receive a form that retains the prisms in their whole length if possible" and "this applies also to devitalized enamel." Anchorage for the filling material should not be placed at the dento-enamel contact.

Prevention of thermal shock to cavities prepared to receive a metallic filling is, in the author's experience, "best accomplished by the application of one or two coatings of the gutta percha collodion."

The author questions "if gold is the best filling material for general purposes," and declares that "probably 75 per cent. of tooth restorations are now made with alloy." He maintains that a more perfect joint between the tooth and the prosthetic restoration is made "with a balanced alloy than with any other material."

A "well-prepared alloy is a plastic" which is "really a cement and can be so prepared that it is absolutely homogeneous in character, i. e., no aircells, and can also be so prepared that it is in itself germicidal." It may be so packed as to give "perfect protection without possible injury to the cavity wall."

The author advises the use of a balanced alloy—one after Black's formula with the addition of gold to overcome "all granular conditions." He advises the "washing of the alloy fillings with hydrogen dioxide, followed by ninety per cent. grain alcohol, or the preferred method—three or four washings in denatured alcohol." "A few alloys thus treated assume a beautiful platinum color which is permanent, and all alloys are improved in color."

IMPRESSIONS

By T. A. Leach, D.D.S., Emporia, Kansas.

As time goes on I get more breezy
Of dentures made upon the Gysi;
But I don't care how much you know
Of how the Adaptable should go,
Remember this (and I'm not guessin'):
You have to have a good impression.

I use the Kerr impression Tray
Because its form more suits my way.
I take and bend it sque-gee-wa
Until it fits the human jaw
Within an eighth of inch or so,
Then trim the rim where muscles go,

I place my compound in the tray
According to the Supplee way.
I warm the surface soft as salve
And place it in the mouth I have
And make the patient close her mug
To make the back end fit up sung.

To get it "muscle trimmed" just right
I have the patient's mouth closed tight
And make them laugh and cry and sneeze
Until it clings to place with ease
So no gyrations of the face
Can get the compound out of place.

I know a job that's well begun
Is said to be about half done,
And that the man who fairly hates
The very thought of making plates
Is the very fellow whom I might
Think, doesn't get his start just right.

Mr. C. S. Bigelow

On December 2nd, 1914, Mr. C. S. Bigelow, President of The Ransom & Randolph Company, Toledo, Ohio, publishers of *The Dental Summary*, died at his home in Toledo, of heart failure.

Mr. Bigelow will be very pleasantly remembered not only by the dentists with whom his business at Toledo brought him into contact, but by many graduates of The University of Michigan, who met him when he was stationed at Ann Arbor.

That was long enough before there was any general discussion of business principles by members of the profession, and indeed was in the days when it was regarded as unethical to even consider such subjects. But I still remember that when we were rather anxious seniors, expecting to be launched upon a business world within a few months, we were glad to drop into Mr. Bigelow's place to discuss such material considerations as the amount of our investment, the fees for different kinds of work, different sorts of towns, possible locations, and the matter of credit at the depot. Mr. Bigelow took a personal interest in each case, and aided many of us by wise suggestions.

Moreover, when we were about to begin practice, many of us found his aid very valuable in determining where to practise, and in extending our slender capital to the utmost in the purchase of an outfit.

During the years from then till now, Mr. Bigelow has been one of my warm personal friends, and at many times I have been indebted to him for valuable assistance. Such a man dignifies and honors any line of activity. Mr. Bigelow did his work well, not only in the discharge of his commercial activities but in extending the helping hand to very many with whom he came into contact. And many are better to-day because of him, than they probably would have been but for him.

GEORGE WOOD CLAPP.

Charles Atwater Davis, D. D. S.

Charles Atwater Davis, D.D.S. was born in Rochester, N. Y., May, 1842, where he lived many years. He was educated at the Rochester University. He then studied dentistry with Dr. Morgan but soon became interested in making and improving dental tools and opened a dental Depot in Rochester, N. Y. He was probably best known as the inventor of the Davis Crown.

When he retired from business he went to California, where he died, November 14, 1914.

BOOK REVIEWS

PRACTICAL ORTHODONTIA. By MARTIN DEWEY, D.D.S., M.D. Professor of Dental Anatomy and Orthodontia, Kansas City Dental College; President of Dewey School of Orthodontia; Editor-in-chief, of *International Journal of Orthodontia*, 329 pages—250 original illustrations. Price, cloth, $3.50. The V. C. Mosby Co., St. Louis, Mo., Publishers.

It is believed by the author that this book will be of real help to the dentist and while it is not intended as a complete solution of things appertaining to orthodontia, it is hoped that those interested in this branch of dentistry may find it of value and assistance.

Dr. Dewey has been for twelve years a teacher of Orthodontia and his many years of training in the Angle School of Orthodontia under Dr. Edward H. Angle, and his years of experience as a teacher of Orthodontia in the Kansas City Dental College and in the Dewey School of Orthodontia have given him an unusual grasp on this subject.

That there is a great need for such a book, few will deny and it is hoped that it will fill this longfelt want.

The author in his preface says—"Since a great many methods pertaining to Orthodontia have been advanced by different authorities in the past, and priority is often a matter of dispute, the author has not attempted to give credit for everything; neither does he claim originality for anything contained herein and while he has done certain things and advanced certain theories which were new to him at one time, others have done the same twenty years ago."

The volume is beautifully gotten out, especially in regard to the illustrations. There is a good Index.

A MANUAL OF DENTAL PROSTHETICS. By GEORGE H. WILSON, D.D.S., formerly Professor and Demonstrator of Prosthetics and Metallurgy in the Dental Department of Western Reserve University, Cleveland, Ohio. Second edition enlarged and thoroughly revised. 12mo, 531 pages, with 386 illustrations. Cloth, $4.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1914.

The new edition of this very valuable work has been brought to our notice and we are pleased to give it the favorable comment it deserves, though the immediate success of the first edition will speak for it a warm welcome.

Dr. Wilson has carried his studies in Plaster of Paris and Vulcanite

much further and in this volume the principles of their use are very concisely and clearly stated.

The chapter on Applied Esthetics has been enlarged in order to include recent thoughts on this subject. The pages on the "Improvement in Tooth Forms" are new and will be of considerable interest to the profession as showing Dr. J. Leon Williams's classification of tooth forms, the result of much study in the field of anthropology.

We note the chapters on Anatomical Antagonization. This subject is treated in a very practical manner. The author makes no attempt at compiling the mass of work which is being done in this important field, but gives a somewhat critical and short presentation of the subject, with recommendations for its application. The former edition gave the instruments and methods of Professor Gysi; in this volume that matter has been replaced by a description of his new and improved methods.

The Adaptable Articulator and its measuring instruments are described in text and by illustration.

A very complete *résumé* of the work of Dr. Vethake E. Mitchell of New York, on Restoration of the Palate and Vomer is added to Chapter XV. The presswork is of the best as is usual with these publishers.

AIDS TO DENTAL ANATOMY AND PHYSIOLOGY. By ARTHUR S. UNDERWOOD, M.R.C.S., L.D.S., late Professor of Dental Surgery at King's College, London; Member of the Board of Examiners in Dental Surgery, Royal College of Surgeons of England; Lecturer in Dental Anatomy and Physiology at the Dental Hospital of London. 4to., cloth; 129 pages and index. Third Edition. Price $1.00. William Wood & Co., New York.

This is the third edition of this book and a number of changes have been incorporated since the first edition was printed. The present edition includes an appendix of Mr. J. Howard Mummery's latest work on "The Process of Calcification in Enamel and Dentine." This paper contains not only Mr. Mummery's recent discoveries, but a good account of some of his earlier work.

"Aids to Dental Anatomy and Physiology"comprises six chapters, viz.: The Nature of Teeth; The Development of the Teeth; Calcification; The Development of the Mouth; The Teeth of Man and The Homologies of the Teeth.

Mr. Underwood is certainly very happy in his style of writing. He possesses the very excellent quality of stating difficult theories in easy and comprehensive language. This faculty he has exercised in this little volume, so that he at once commands the attention and the interest of his readers; this naturally makes the book popular with the students.

The two pages under the sub-heading "The Teeth of Ancient Man" show Professor Underwood's unusual ability.

The booklets of Professor Underwood are very well known and there is no use in our discussing further the valuable information contained in this new one.

THE TONSILS AND THE VOICE IN SURGERY, SPEECH AND SONG. A Comprehensive Monograph on the Structure, Utility, Derangement and Treatment of the Tonsils, and of their Relationship to Perfect Tone Production. A Research Study with Original Contributions from the Highest Authorities. By RICHARD B. FAULKENER, M.D. (Columbia University). Copyright, 1913. Publishers, The Presbyterian Book Store, Pittsburgh, Pa.

Dr. Faulkener has been for many years a teacher of the voice and its delivery and was induced to give this book to the public by a question that was placed before him—"What are the tonsils for?" This query so interested Dr. Faulkener that he is said to have "ransacked Europe and America to give the answer." This has been very ably and satisfactorily accomplished in this volume.

The most interesting part of the work is that which gives recent and authoritative treatment of the tonsils and the discoveries which have been made in the science of the voice in regard to its preservation, use, and treatment. Literature on the voice and tonsils is scarce, so that this work must be considered rather unique. While the book is not exactly of a dental character, everyone would be benefited by reading it.

The chapter on "Principles of Treatment" forms a small treatise well worth attention.

NOTES ON DENTAL SURGERY AND PATHOLOGY. By T. W. WIDDOWSON. With 150 illustrations. John Bale, Sons and Danielsson, Great Litchfield St., London, W., Eng.

This work is intended as a companion to "Notes on Dental Anatomy and Histology," by the same author and is to be used as a book of ready reference by the busy dentist, and also as a note-book for students; for this purpose the book is interleaved with blank pages for notes.

Evidently this volume will take a very useful place in the field of dental literature. It is a sort of abstract of popular text-books and is well compiled. The illustrations are excellent and are a great assistance in demonstrating important points. This is especially noticeable in the pages on "Cleft Palate" and operations for this deformity; many illustrations are to be found showing the different parts involved in this unfortunate condition.

We are pleased to recommend this compendium of dental surgery.

SOCIETY NOTES

IDAHO.

The next meeting of the Idaho State Board of Dental Examiners for the examination of candidates will be held in Boise, Idaho, commencing Monday morning, January 4th at nine o'clock.—ALBERT A. JESSUP, Boise, Idaho, *Secretary*.

ILLINOIS.

The annual mid-winter meeting of the Chicago Dental Society will be held in the Hotel La Salle, Jan. 29–30, 1915.—P. B. D. IDLER, *Secretary*.

MONTANA.

The Montana State Board of Dental Examiners, will meet in session on the Second Monday in January, 1915.—G. A. CHEVIGNY, Butte, Mont., *Secretary*.

SOUTH DAKOTA.

The South Dakota State Board of Dental Examiners will hold its next meeting at Sioux Falls, S. D., January 19, 1915, at 9 A. M. sharp, continuing three days. All applications for examination can be made to the Secretary on January 18th at Sioux Falls, S. D. Fee $25.—ARIS L. REVELL, Lead, So. Dak., *Secretary*.

AMERICAN INSTITUTE OF DENTAL TEACHERS

The annual meeting of the American Institute of Dental Teachers will be held at Ann Arbor, Mich., January 26–28, 1915.

There will be a number of interesting papers, reports, and discussions by prominent dental educators. All dental teachers are cordially invited to be present.

J. F. BIDDLE, Secretary.

517 Arch Street,
N. S. Pittsburgh, Pa.

MEETING OF THE ALUMNI ASSOCIATION WASHINGTON UNIVERSITY DENTAL SCHOOL, ST. LOUIS, MO.

The forty-ninth annual clinic will be held Monday and Tuesday, February 8th and 9th, 1915. Papers of interest to the progressive dentist will be read. The Executive Committee is making every effort to have this meeting one where the practical as well as scientific side of modern dentistry shall be shown. Mark off the dates—come—get new inspiration—all ethical dentists cordially invited.

H. M. FISHER, *Secretary*.

HARVARD DENTAL ALUMNI ASSOCIATION

A special meeting of the Harvard Dental Alumni Association will be held at the Harvard Union, corner of Harvard and Quincy Streets, Cambridge, Mass., on Thursday, January 14th at six o'clock. Dinner will be served at seven o'clock; tickets $1.50 each.

Every one of the graduates of the School is cordially invited to attend, whether or not he is a member of the Association.

HAROLD DEW. CROSS, President.
FRANK T. TAYLOR, Secretary.

CHICAGO DENTAL SOCIETY

The annual mid-winter meeting of the Chicago Dental Society will be held in the Hotel La Salle, January 29th and 30th, 1915.

Friday January 29th, papers by Dr. Robert B. Preble and Dr. Elmer E. Best will be read.

Saturday January 30th, devoted to clinics. The clinicians will be so arranged that one can see to the best advantage the clinic in which he is especially interested. The meeting will

close with a banquet Saturday evening, at which there will be speakers of national reputation and other attractions of equal interest to the audience.

The exhibitors' display room will be open during the entire meeting.

T. L. GRISAMORE, *President.*
P. B. D. IDLER, *Secretary.*

MEETING OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES

The National Association of Dental Faculties will hold its meeting on the 26th and 27th of January at Ann Arbor, Michigan. Headquarters, The Allenel Hotel.

This meeting will precede the Teachers' Association meeting which will be held from the 28th to the 30th. Besides the regular business there will be several papers of interest to educators read before the Association.

The Executive Committee meets at nine o'clock Tuesday the 26th. Regular session will open at ten.

B. HOLLY SMITH, *Chairman of Executive Committee,*
Charles Channing Allen, *Secretary.*

CHATTANOOGA DENTAL SOCIETY

The annual business meeting of the Chattanooga (Tennessee) Dental Society was held recently, during which the following officers were elected:

President, Dr. William F. Stone; Vice-president D. N. C. Hunt; Secretary, Dr. I. R. Stone; Treasurer, Dr. George W. Wagner.

The society is planning to give semi-annual banquets to which dentists of national reputation will be invited to deliver scientific addresses.

FUTURE EVENTS

January 4, 1915.—The Idaho State Board of Dental Examiners, Boise Idaho.—ALBERT A. JESSUP, Boise, Idaho, *Secretary.*

January 11, 1915.—Montana State Board of Dental Examiners.—G. A. CHEVIGNY, Butte, Montana, *Secretary.*

January 14, 1915.—Harvard Dental Alumni Association, at the Harvard Union, Cambridge, Mass.—HAROLD D. CROSS, *President*; FRANK T. TAYLOR, *Secretary.*

January 26–28, 1915.—American Institute Dental Teachers, Ann Arbor, Mich.—J. F. BIDDLE, Ann Arbor, Mich., *Secretary.*

January 29–30, 1915.—Chicago Dental Society, Hotel La Salle, Chicago, Ill.—T. L. GRISAMORE, *President*; P. B. D. IDLER, *Secretary.*

March 9, 1915.—Fox River Valley Dental Society, Oshkosh, Wis.—R. J. CHADY, *Secretary.*

April 14–15, 1915.—Odontological Society of Western Penna., Annual Spring Meeting (Place not designated).

April 20–22, 1915.—Connecticut State Dental Association, fifty-first anniversary, Hartford.—CHAS. H. RIGGS, *President*, Hartford, Conn.; E. R. BRYANT, *Secretary*, New Haven, Conn.

May 18–20, 1915.—Indiana State Dental Association, Claypoole Hotel, Indianapolis.—A. R. ROSS, Lafayette, Ind., *Secretary.*

May 19–22, 1915.—Texas State Dental Association, Galveston, Texas.

June, 8–10, 1915.—The 46th Annual Meeting of the Kentucky State Dental Association, Ashland, Ky.

July 13–15, 1915.—Wisconsin State Dental Society, Oconomowoc, Wis.—O. G. KRAUSE, *Secretary.*

August 30, 1915.—Federation Dentaire Internationale, San Francisco, Cal.—BURTON LEE THORPE, *Assistant Secretary.*

August 30–Sept. 1–9, 1915.—Panama-Pacific Dental Congress, San Francisco, Cal.—ARTHUR M. FLOOD, 240 Stockton St., San Francisco, Cal., *Secretary.*

November 4–6, 1915.—Virginia State Dental Association, Richmond.—C. B. Gifford, *Sec'y.*